PEGELMESSPLATZ PSM-5

LEVEL MEASURING SET PSM-5

10 kHz bis (to) 36 MHz

Anhang
Appendix
444 MN

0.5.4.70. 1896 GN

Printed in Western Germany

Änderungen vorbehalten

Subject to change without notice

Wandel u. Goltermann · 7410 Reutlingen

Corrections to the Circuit Diagrams

RWO-5/BN 241	T 305, 306 T 801, 802	BFY 90 2 N 2219
	Gl 801, 802 Gl 1101 Gl 1102	1 N 4448 ZP 6,8 1 N 4448
	C 1203	68 µF
	T 1303, 1306, 1308, 1311	2 N 2219
	Gl 1302	ZP 8,2
	C 1407	3 pF
	Gl 1402, 1403 Gl 1404, 1412	ZP 5,1 rot (red) ZP 10
	T 1501, 1502, 1510	2 N 2219
	Gl 1501, 1502, 1504, 1509...1511	ZP statt (instead of) ZG, ZF
	T 1602, 1604...1606, 1610, 1611	2 N 2219
	Gl 1601, 1602, 1607, 1608 Gl 1603, 1604 Gl 1605, 1606	ZP statt (instead of) ZG, ZF 1 N 4448 BAY 18
	Gl 1802	1 N 4448
	Gl 1901	AA 137
	Gl 2106	BAY 72
	Gl 2501	ZP 6,2
PS-5/BN 242	T 101	2 N 2369
	T 202 T 203 T 204 T 205, 206	2 N 2369 2 N 2905 2 N 2219 2 N 2369
	Gl 501...504	1 N 82 L
	R 708 R 709 R 713 R 714	47 Ω 10 Ω 33 Ω 22 Ω

	C 705	2,2 nF
	C 708	390 pF
	R 835	4,7 kΩ
	T 802	2 N 2905
	T 804, 806, 808	2 N 2369
	T 1001, 1002	2 N 2219
	T 1301...1303	2 N 2219
	Gl 1301	ZP 18
PM-5/BN 243	R 107	10 MΩ/0,5 W
	C 106	3 pF
	Gl 201	ZP 8,2
	R 502	2,2 kΩ
	T 1605, 1606, 1608	2 N 2219
	Gl 1601, 1602	BA 121
	Gl 1603, 1604, 1607, 1608	1 N 914/1 N 4448
	Gl 1701, 1702	1 N 914/1 N 4448
AZD-1/BN 364	Gl 4	ZP 8,2

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Anmerkungen zu den Stromlaufplänen (Circuit Diagram Details)

Alle angegebenen Spannungen sind mit einem Instrument 100 kΩ/V gegen 0 V gemessen
(All voltage ratings measured with respect to 0 V with 100 kΩ/V meter).

Belastbarkeit der Widerstände (Resistor Ratings)

1/20 W 1/10 W 1/8 W 1/4 W 1/3 W 1/2 W 1 W 1,4 oder (or) 2 W

ab 1 W röm. Ziffern (roman numerals in excess of 1 W)

Anschlußschemas (Connection Details)

Dioden (Diodes)

AA 118, AA 135, AA 137, AAZ 13, BA 102, BA 109, BA 109/I, BA 109/II, BA 110, BA 111, BA 112, BA 120, BA 141, BA 149, BAY 18, BAY 31, BAY 71, BAY 72, FD 600, HD 5001, OA 127, OA 128, OA 132, OA 159, OA 182, TIV 305, ZM 15, ZP 5,1; ZP 6,2; ZP 6,8; ZP 7,5; ZP 8,2; ZP 10, ZP 12, ZP 18; 1 N 82 L, 1 N 914

K Farbpunkt (cathode colour marked)

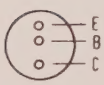
AAZ 12, FD-5, Z 7, Z 8

ZD 10, BYY 31

Transistoren (Transistors)

AC 131, AFY 18, ASY 26, ASY 27, ASY 29, ASY 76, BCY 32, BCY 34, BSW 25, BSX 13, BSX 27, BSY 54, BSY 80, 2 N 708, 2 N 711, 2 N 930, 2 N 960, 2 N 1907, 2 N 1908, 2 N 2049, 2 N 2219, 2 N 2219 A, 2 N 2368, 2 N 2369, 2 N 2475, 2 N 2905, 2 N 3251, 40347

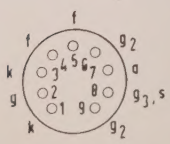
BFY 90, 2 N 2708, 2 N 918



BCZ 12

2 N 3819

Röhre (Valve)



E 810 F

Abkürzungsbeispiele (Abbreviation examples)

(14)	= Stromlaufplan 14	= circuit diagram 14
280-M	= Leiterplatte M	= circuit board M
Pkt. 6	= Anschlußpunkt 6	= connection point 6
TP 401	= Testpunkt 401	= test point 401

Farbkennzeichnung (Colour coding)

bl	blau	blue
blank	blank	bare wire
br	braun	brown
fl	farblos	transparent
ge	gelb	yellow
gn	grün	green
gr	grau	grey
rs	rosa	pink
rt	rot	red
Schirm	Schirm	screening
sw	schwarz	black
vio	violett	violet
ws	weiß	white
grrt	grau/rot	grey/red

Relais in Ruhestellung gezeichnet

Relays shown in rest position

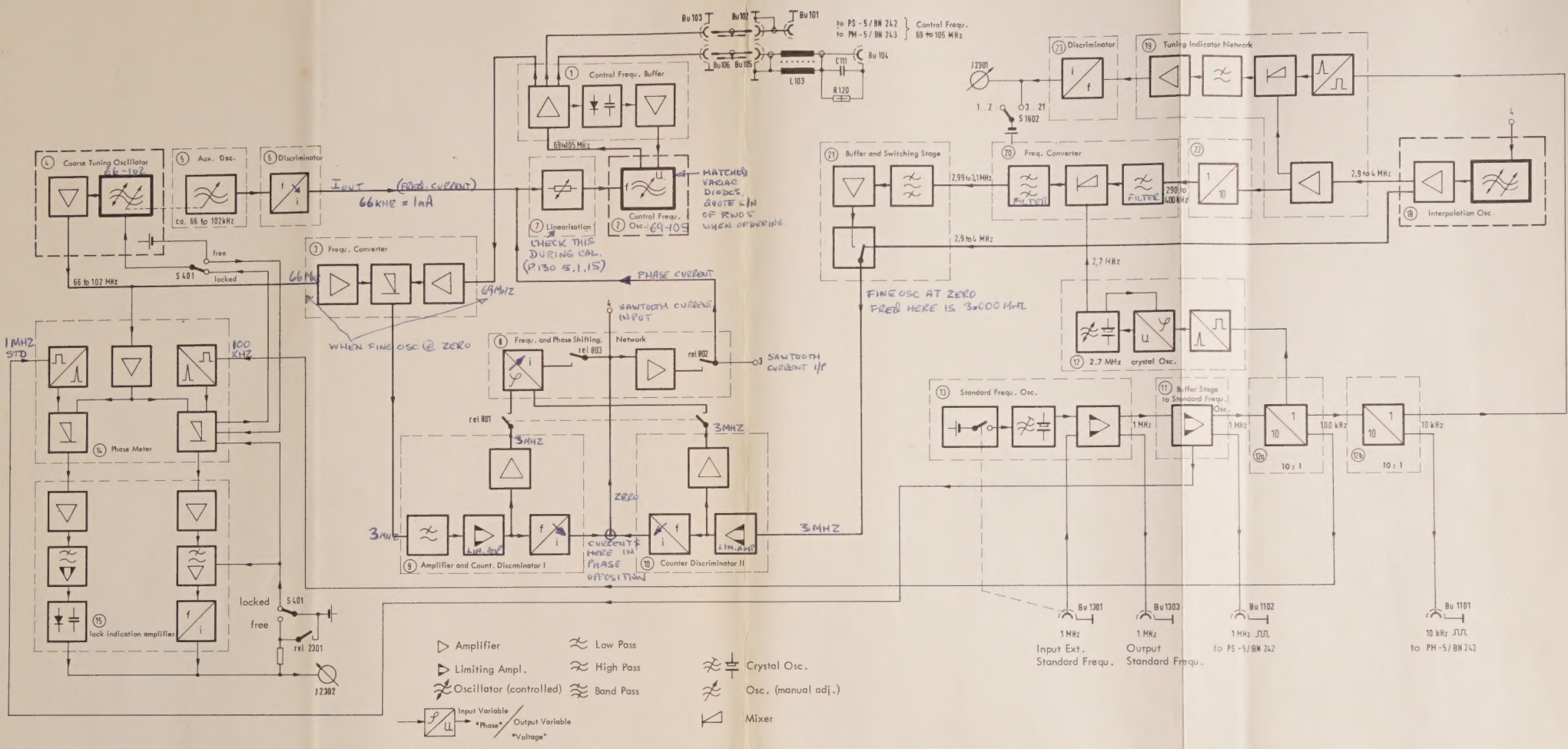
Äquivalenzliste für Transistoren (Transistor Equivalents)

2 N Typ / äquivalente Proelektron Bezeichnung (2 N Type/Equivalent Proelektron Designation)

2 N 708/BSX 88	2 N 2222/BFX 95
2 N 918/BFX 73	2 N 2368/BSX 92
2 N 930/BFX 93	2 N 2369/BSX 93
2 N 1613/BFX 69	2 N 2484/BFX 93 A
2 N 1893/BFW 33	2 N 3964/BFW 22
2 N 2219/BFX 97	2 N 2223/BFX 71

RWO-5 RELAY 201, 202, 203 } REEDS MRH 2

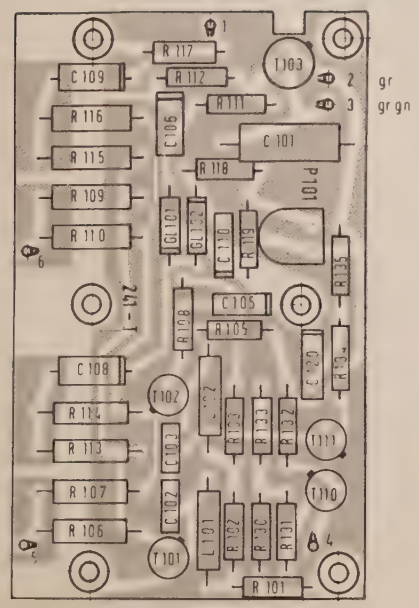
GAS RELAYS :- St 57 Ka 16n NORMALLY OPEN (RED DOT)
St 57 Kr 16n " CLOSED (GREEN DOT)
MINDESTANSPRECHSPANNUNG (MINIMUM PULL-IN VOLTAGE) ≤ 1·8V @ 25°C
≤ 2·0V @ 60°C

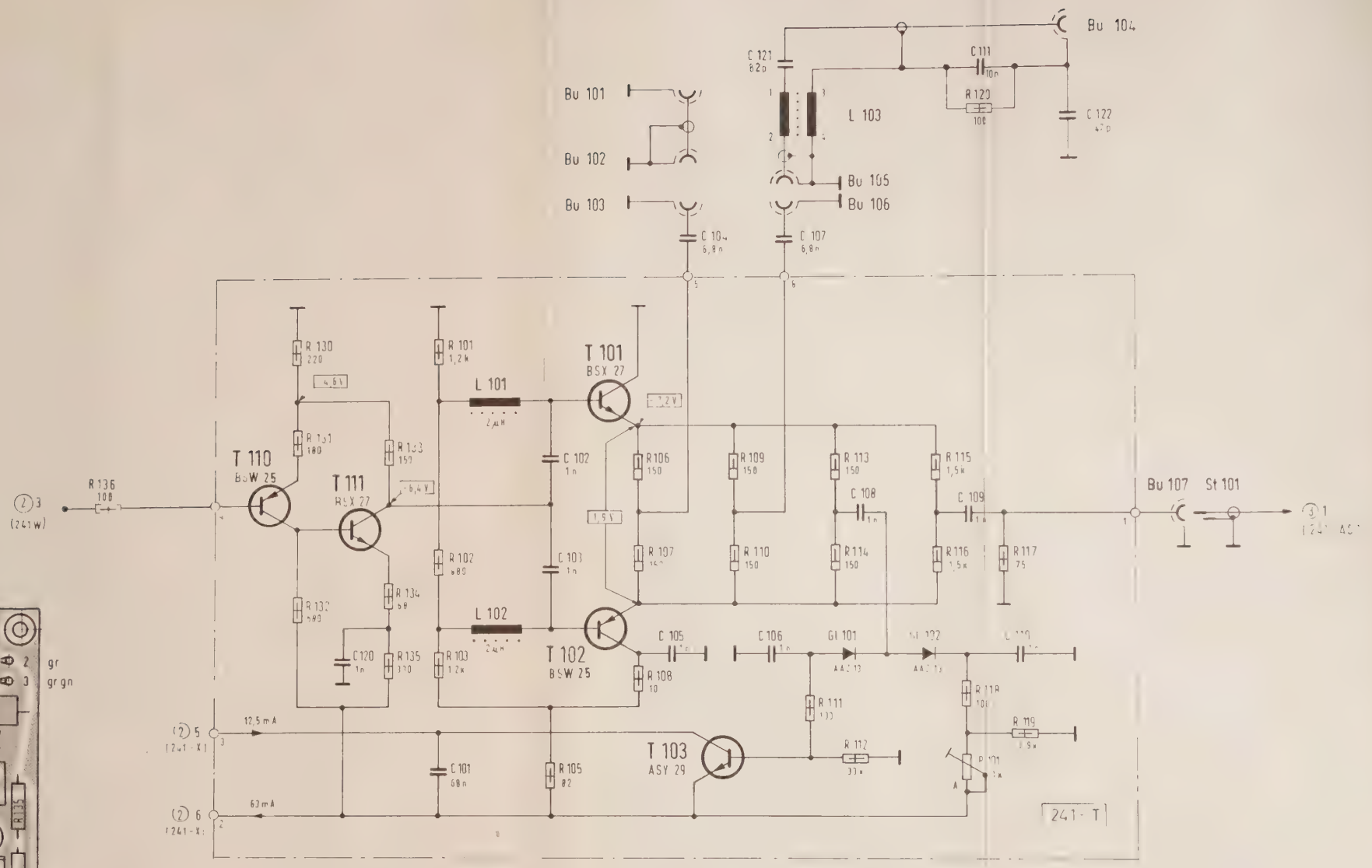


Mode	normal: fine tuning		sweep: Frequ. Deviation																	
Switch S 1602 in position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			Hz						kHz									MHz			
			17,5	35	70	175	350	700	1,75	3,5	7	17,5	35	70	175	350	700	1,75	3,5	7	17,5
sawtooth current applied to			Circuit 18, Point 4										Circuit 8, Point 4 NO PHASE LOCK					Circuit 8, Point 3 NO FREQ. LOCK			
relay excited			801, 802, 803										802					2301			
Output from stage (21)	2,99 to 3,1 MHz	2,9 to 4 MHz	2,99 to 3,1 MHz						2,9 to 4 MHz												

RWO-5 /BN 241

Block Circuit Diagram



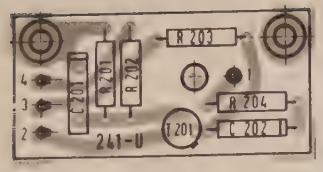


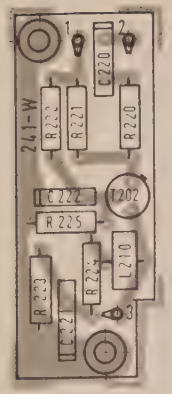
RWO-5 BN 241 (1)

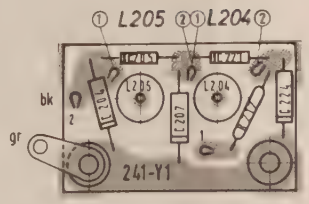
Steuerfrequenz-Trennstufe

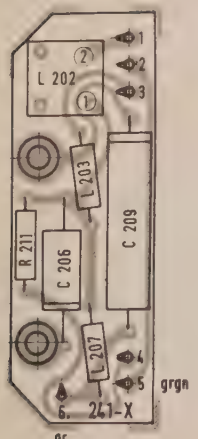
Control Frequency Buffer Stage

CHECK 15V ON BOARD (7)









Teil (Part) 1

241-U

Teil (Part) 2

L 201

T 201
2 N 2368/BSX92

- 9,7 V

C 202
68p

R 204
47

R 201
1k

R 202
1k

R 203
330

Gl 201/I BB 104 x)
Gl 201/II BB 104 x)
Gl 203 BB 103 x)
Gl 202/I BB 104 x)
Gl 202/II BB 104 x)
Gl 204 BB 103 x)

R 206
100

Teil (Part) 3

241-W

C 221
1n

R 223
1,2k

R 224
270

L 210

C 220
1n

R 220
560

- 7 V

- 11 V

T 202
BSX 27

R 221
1,2k

R 222
2,2k

C 222
1n

R 225
3,3k

C 208
1n

9 mA

9 mA

Teil (Part) 4

241-X

L 203

R 211
100

L 207

63 mA

- 18 V

81 mA

Fi 201

L 202

C 206
2,2µ

C 209
6,8µ

241-Y1

C 205
27p

C 223
150p

L 205

L 204

R 212
100

C 204
470p

C 207
820p

C 224
330p

12,5 mA

Teil (Part) 5

x) Die Dioden Gl 201...204 müssen nach der Auswahlvorschrift Bv. 241-9362 ausgesucht werden.

Diodes Gl 201 to 204 must be selected according to the instructions Bv. 241-9362.

BB 104

BB 103

K

A1 K A2

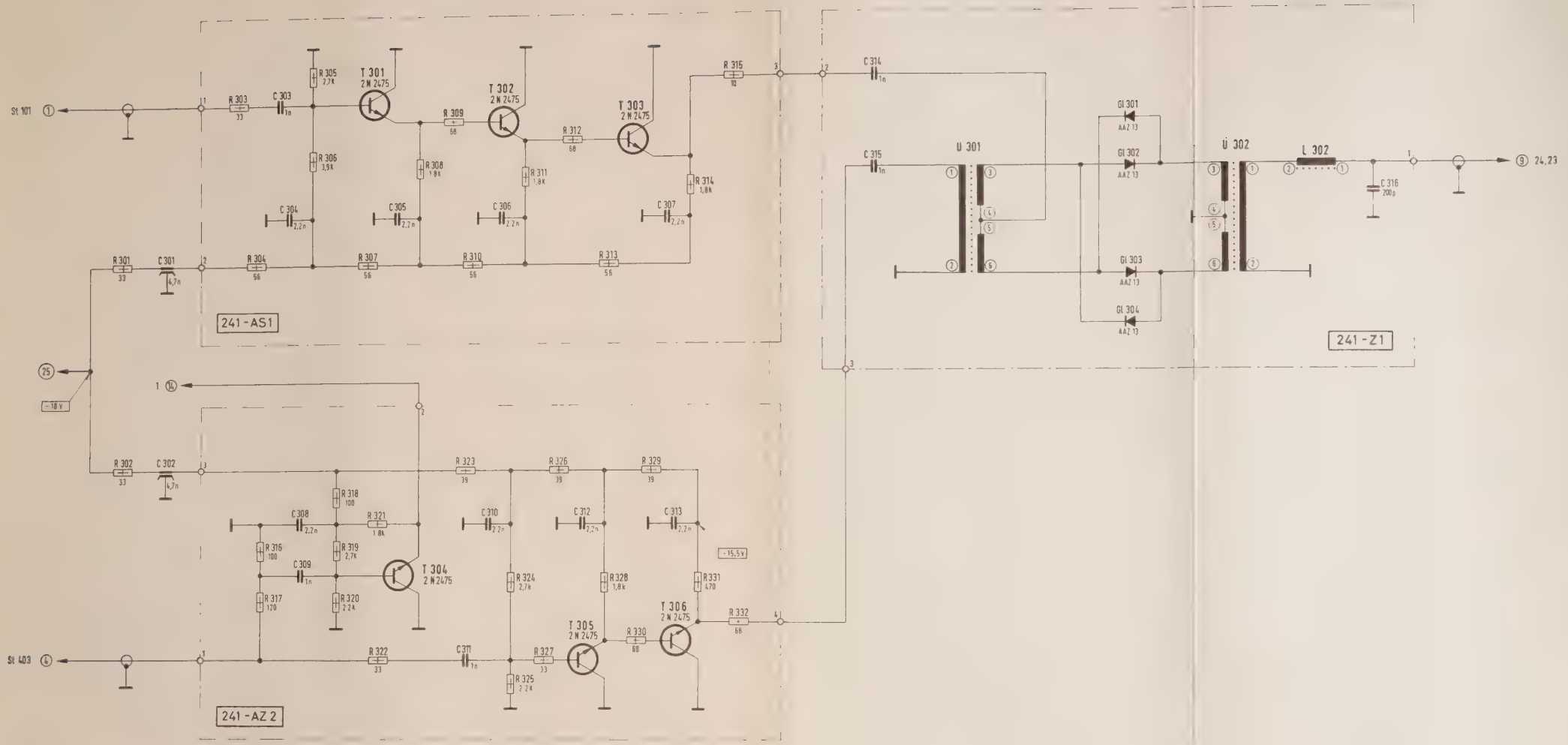
1) Serie K: Gedruckte Schaltung 241-Y Pkt. 1, Abgang zu (7) 7 entfällt.

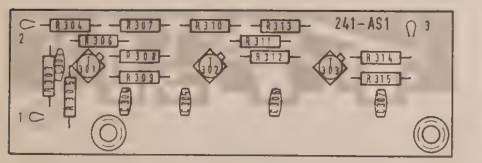
Series K: PC-board 241-Y point 1, output to (7) 7 deleted.

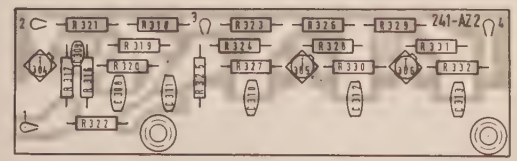
RWO-5 BN 241

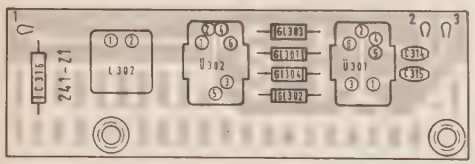
Steueroszillator (2)

Control Oscillator





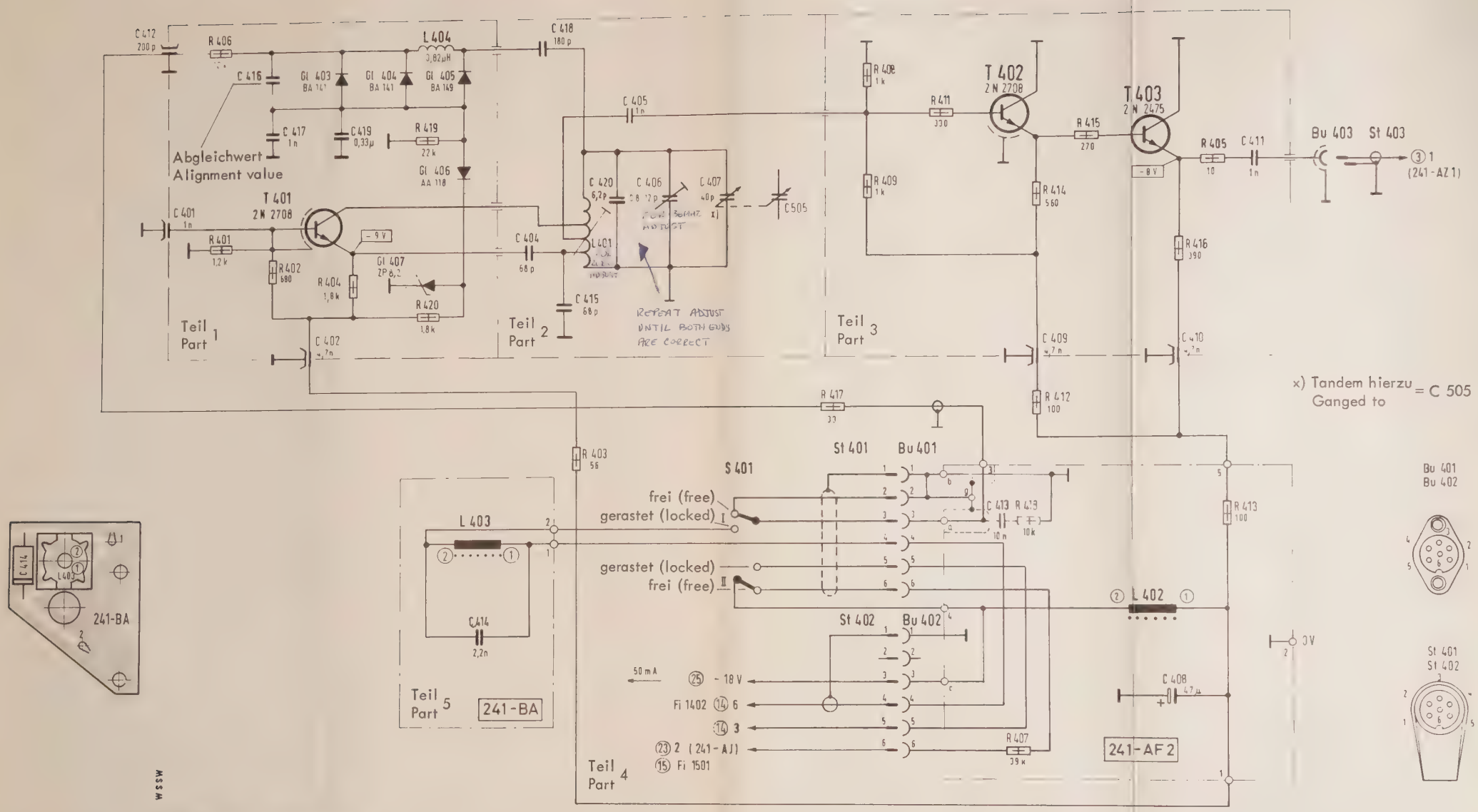




RWO-5 BN 241

Umsetzer (3)

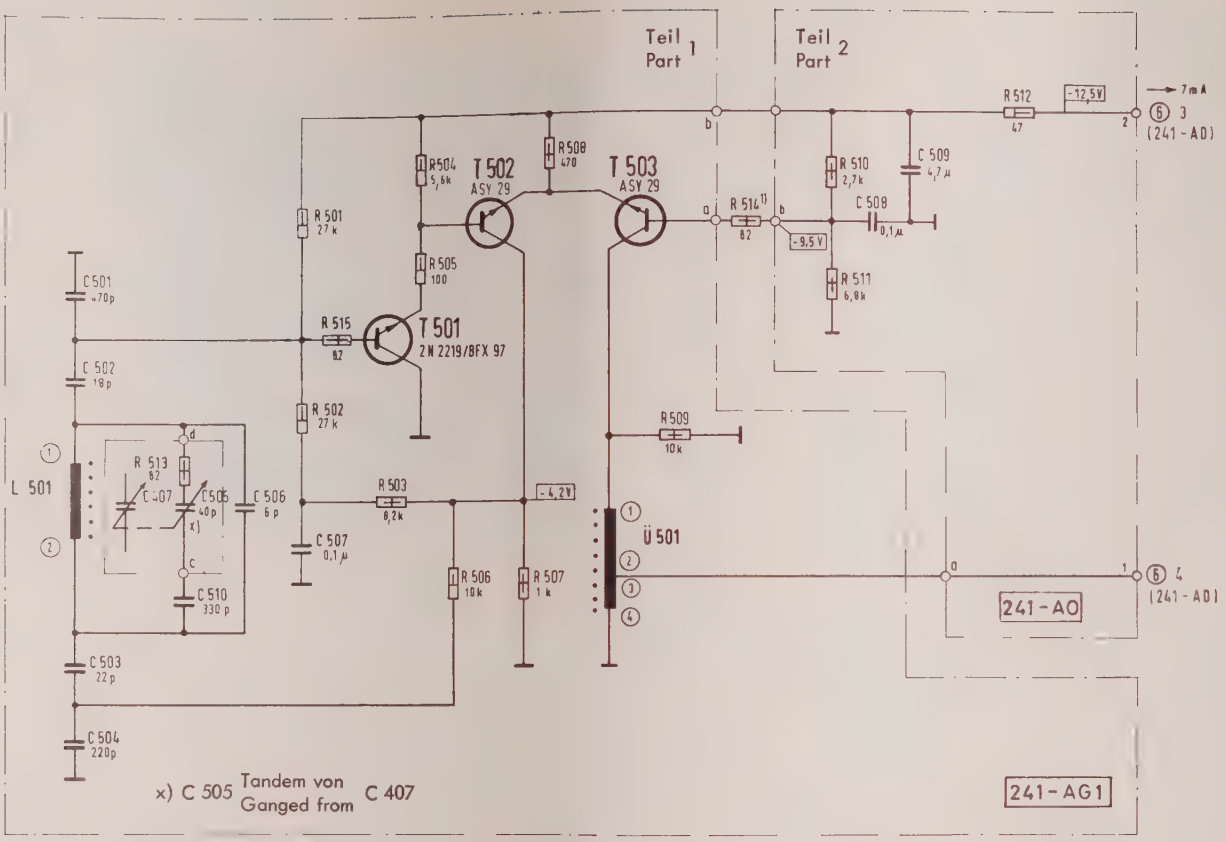
Converter

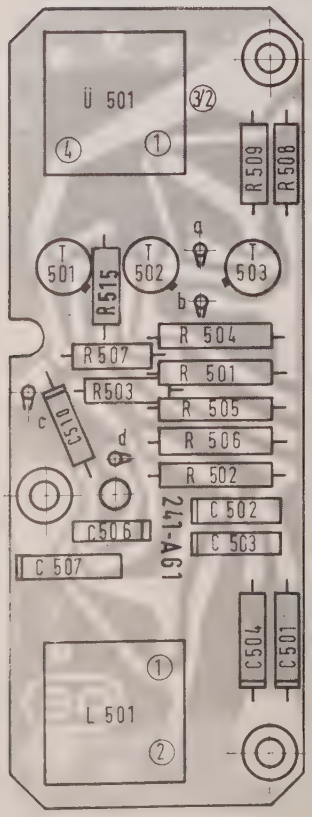


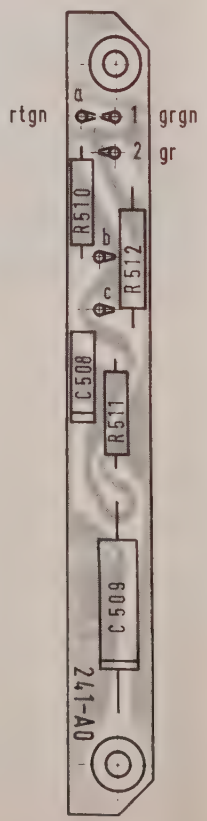
RWO-5 BN 241 ④

Grobabstimmoszillator

Coarse Tuning Oscillator



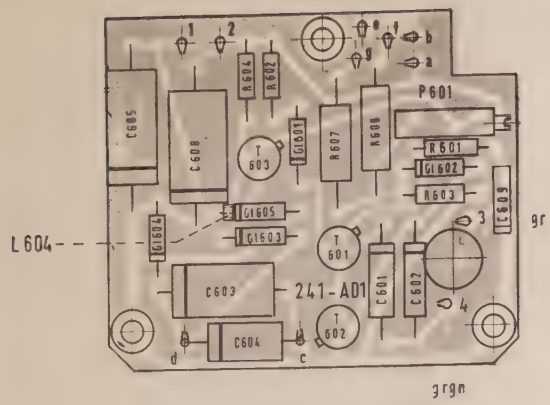


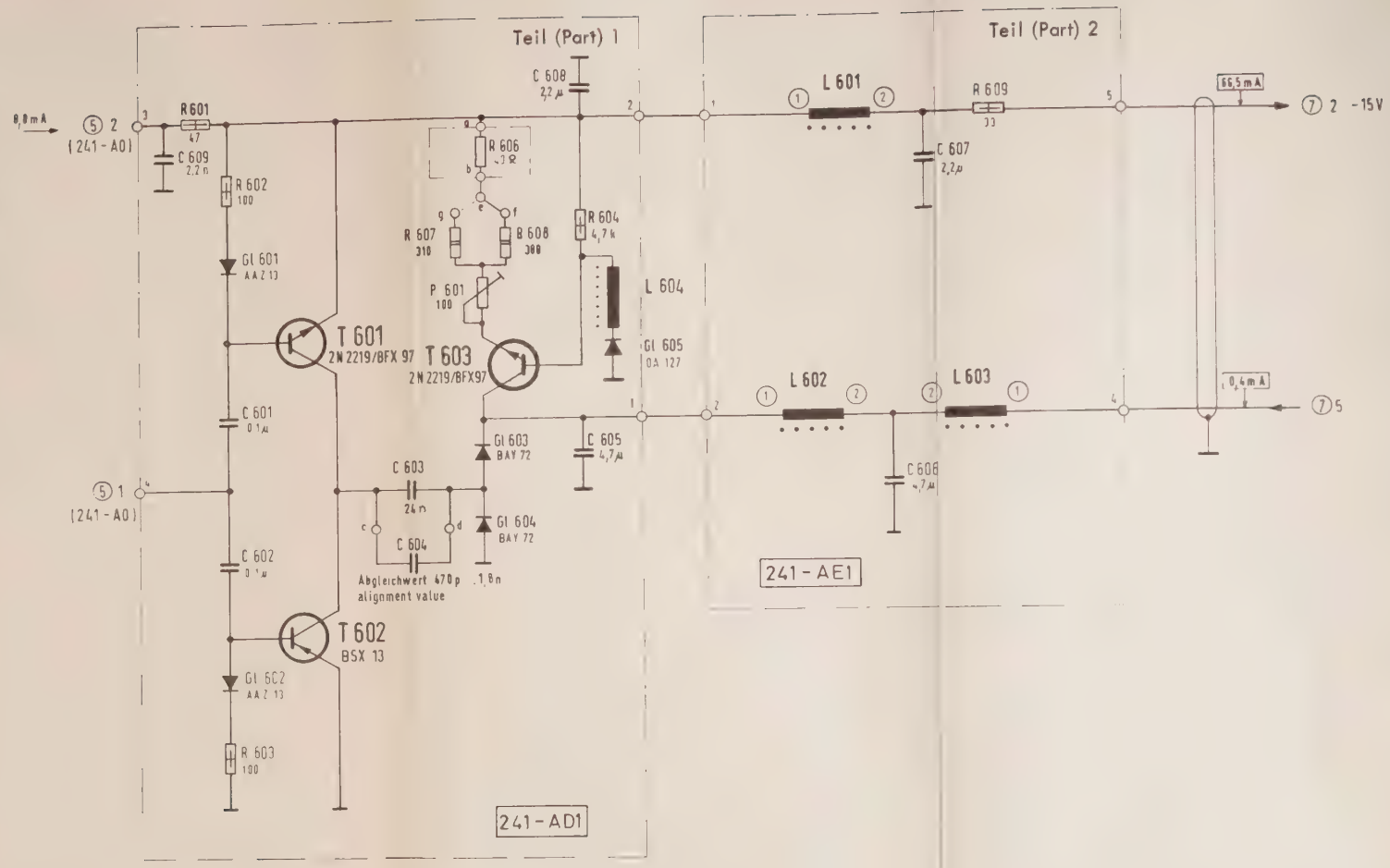


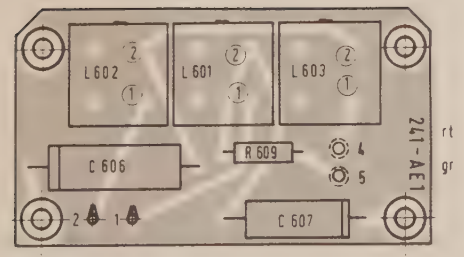
RWO-5 BN 241

Hilfsoszillator ⑤

Auxiliary Oscillator







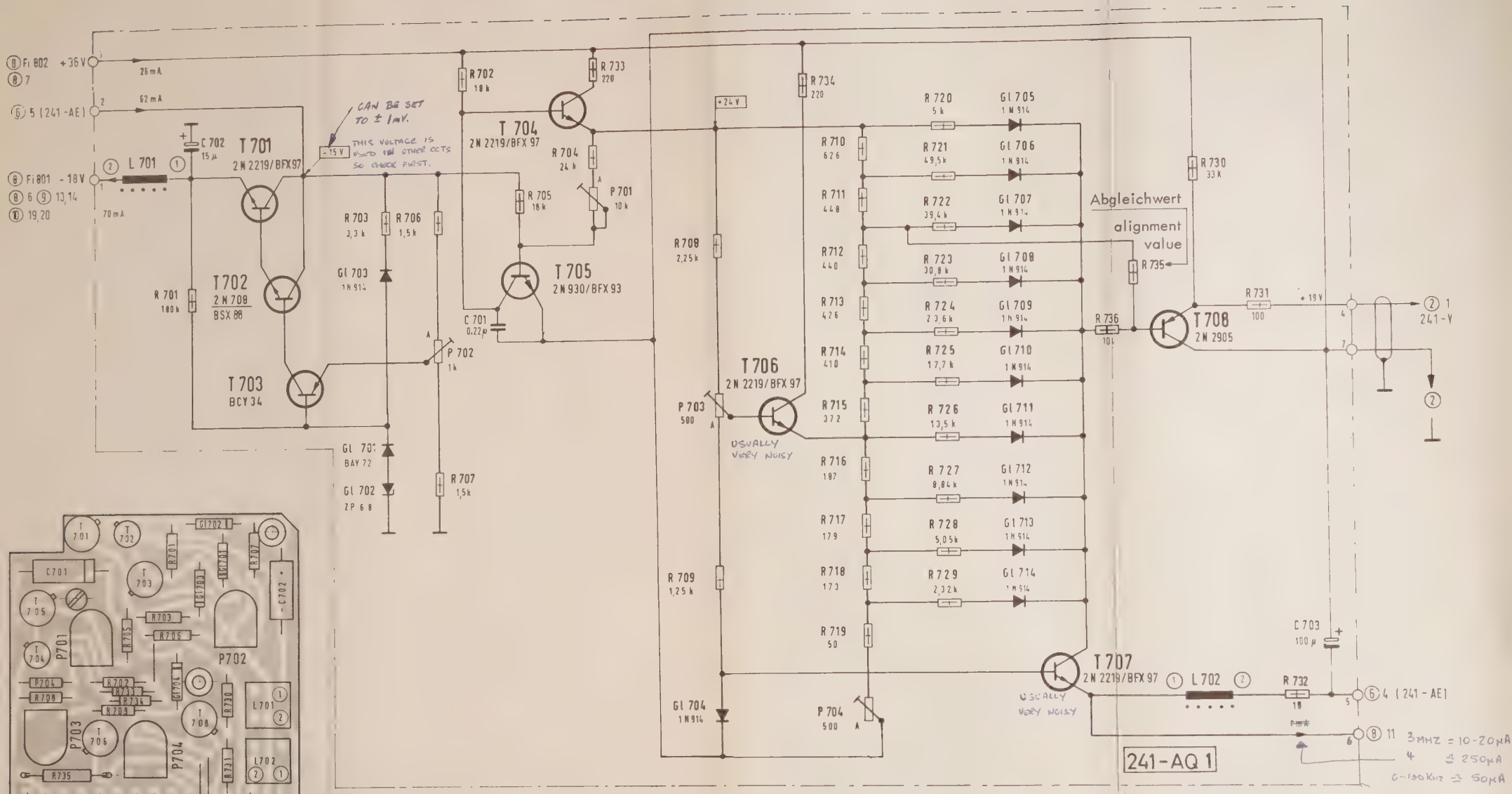
Gleichstromangaben gelten für 103 MHz Grobabstimmoszillator-Frequenz (Anschlag) und abgeglichene Stellung von P 601.

DC-current ratings valid for 103 MHz coarse tuning oscillator frequency and aligned position of P 601.

RWO-5 BN 241 (6)

Diskriminator für Hilfsoszillator

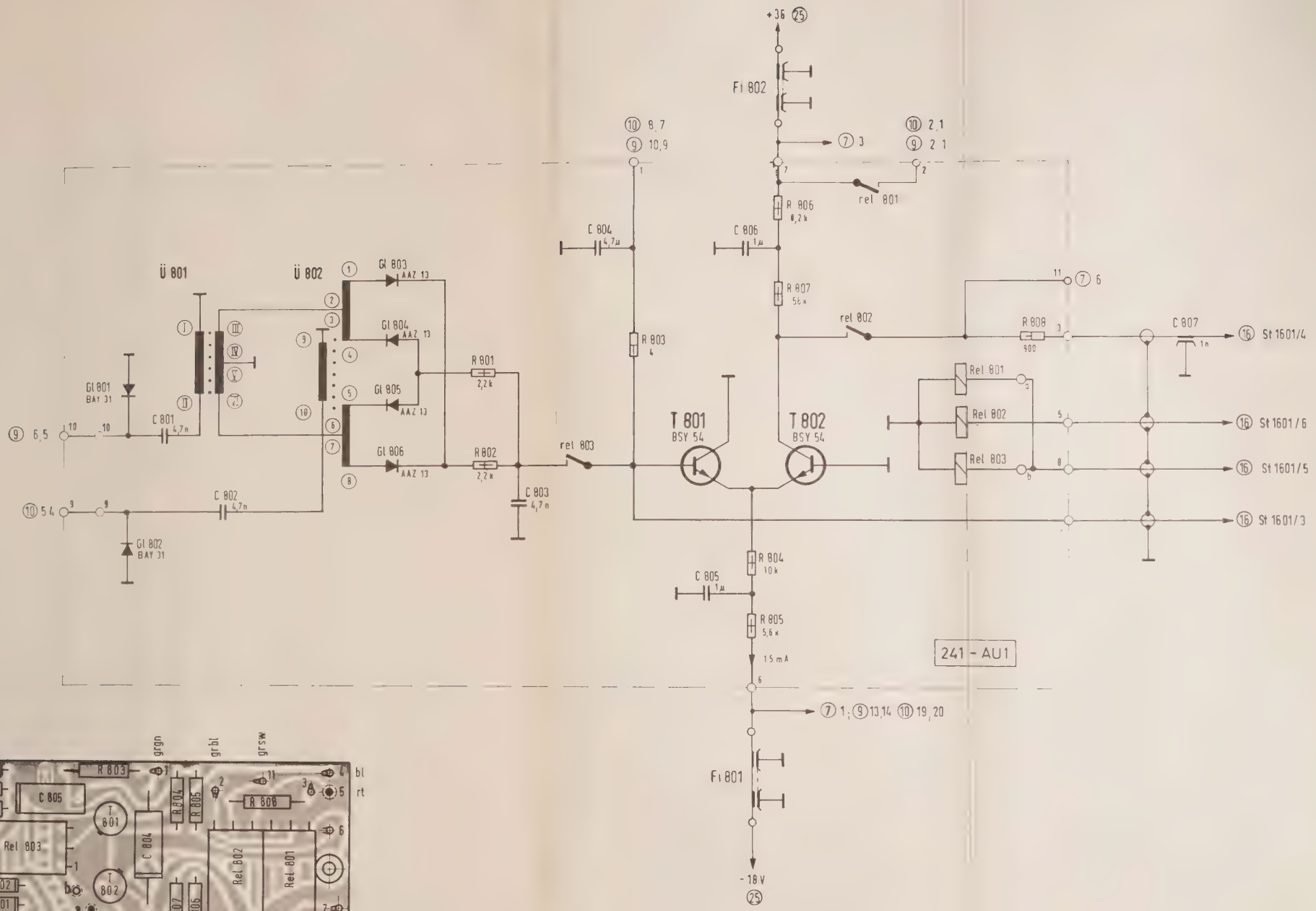
Discriminator for Auxiliary Oscillator

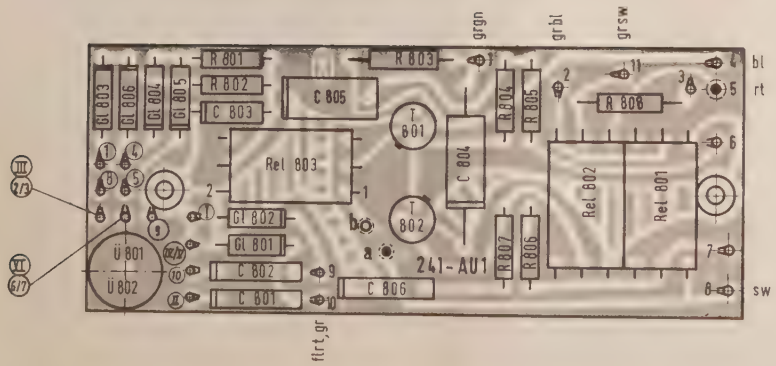


RWO-5 BN 241

Linearisierung (7)

ab Serie (from series) L Linearizing Network



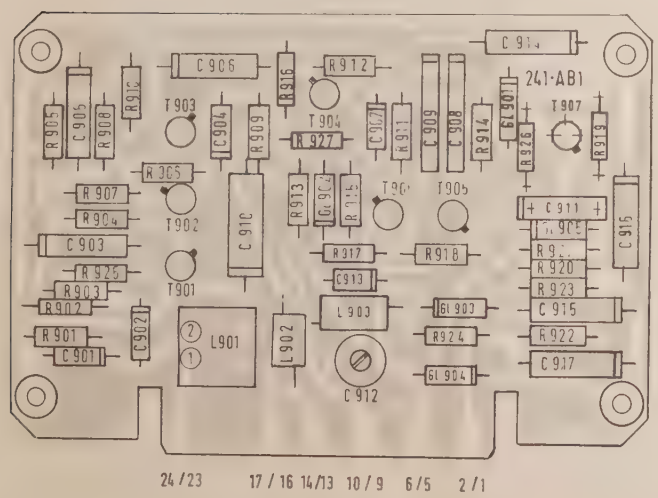


RWO-5/BN 241

Frequenz- und Phasenregler (8)

Frequency- and Phase Control

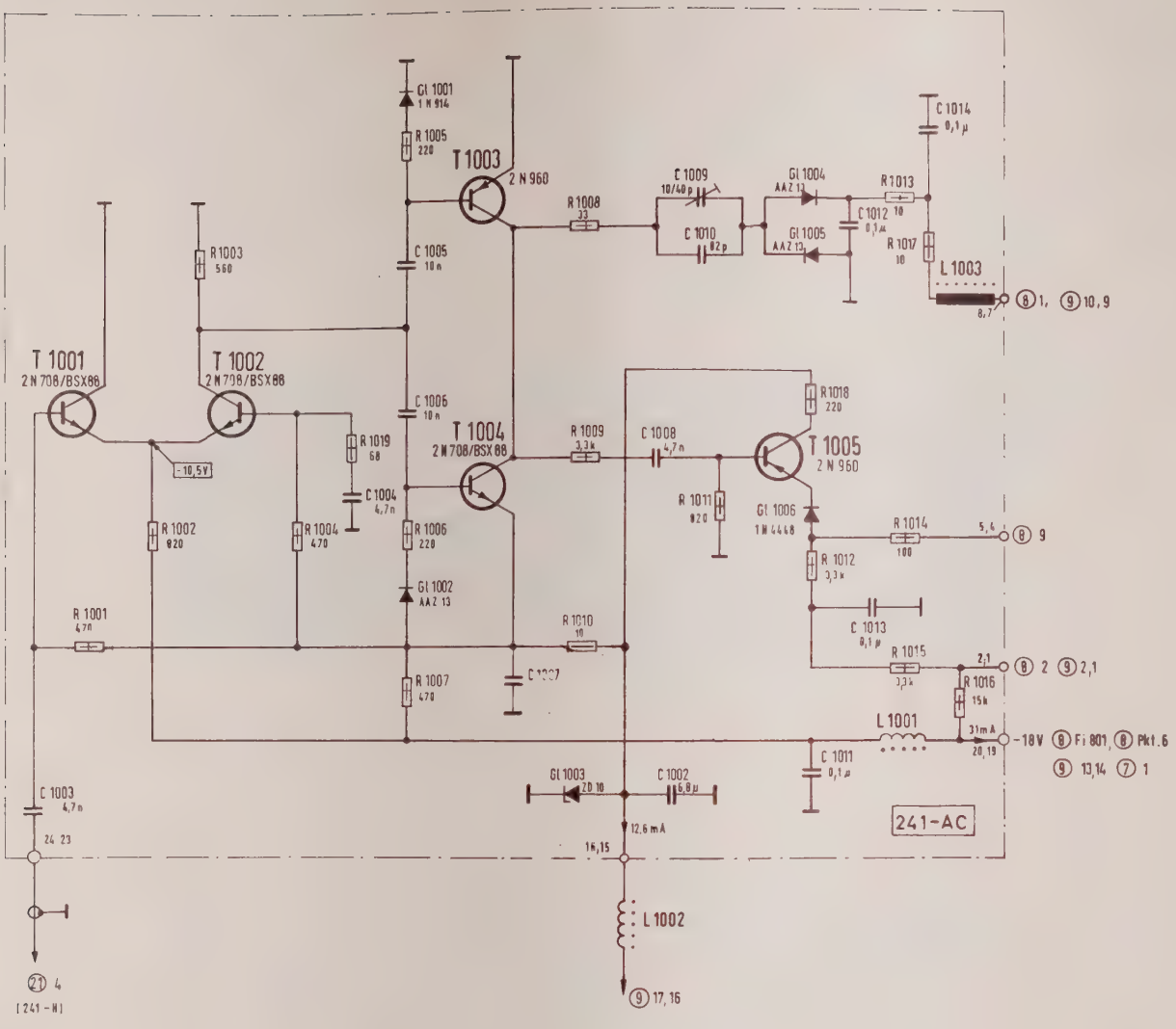
When aligning 3 MHZ to ± 250 KHZ @ (9) PKT 4, 5, disconnect loop at (7) PKT 6.

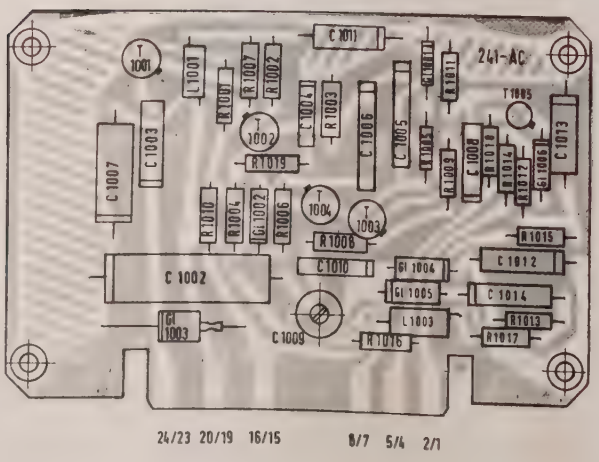


RWO-5 BN 241 (9)

NF-Verstärker und Zähldiskriminator I

AF-Amplifier and Counting Discriminator I

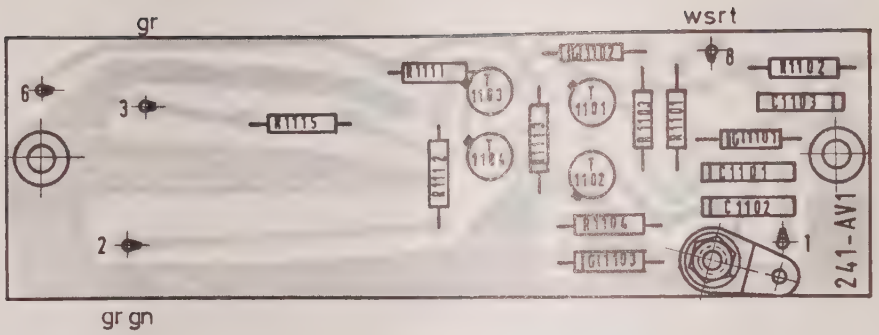


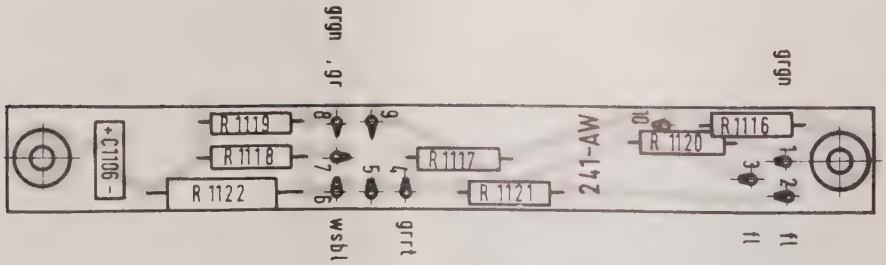


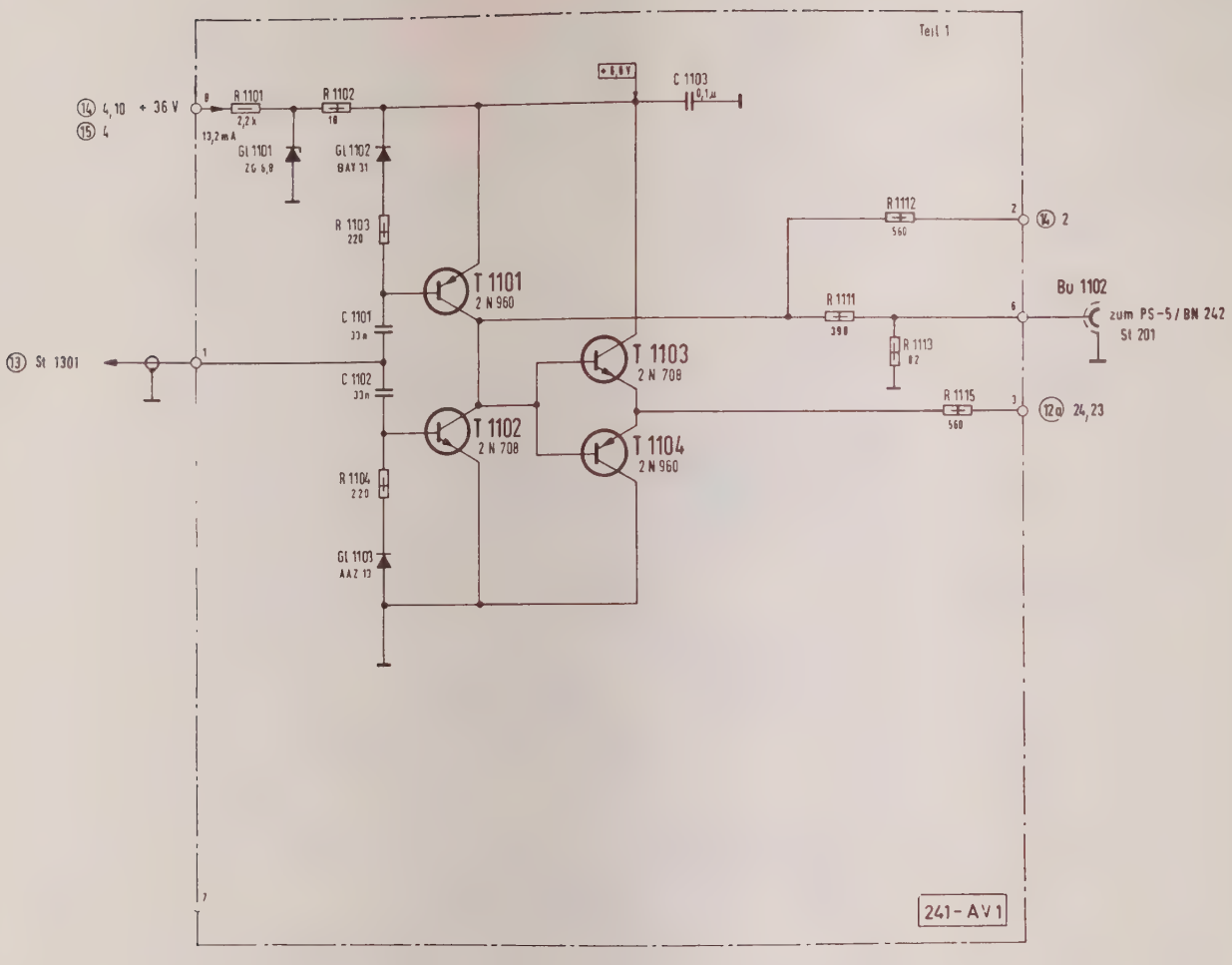
RWO-5 BN 241 (10)

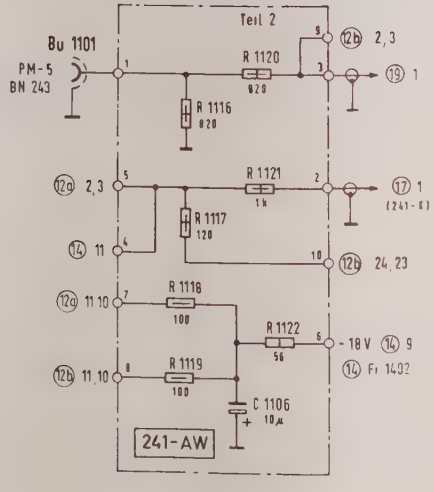
Zähldiskriminator II

Counting Discriminator II


gr
wsrt
6
3
2
8
1
R1111
R1115
R1112
R1113
R1103
R1101
R1102
R1104
R1106
G1101
G1102
G1103
C1101
C1102
T 1103
T 1104
T 1101
T 1102
241-AV1
gr gn


grgn
gr
grgn
C1106
R 1119
R 1118
R 1122
R 1117
R 1121
R 1120
R 1116
241-AW
wsbl
grrt
11
11

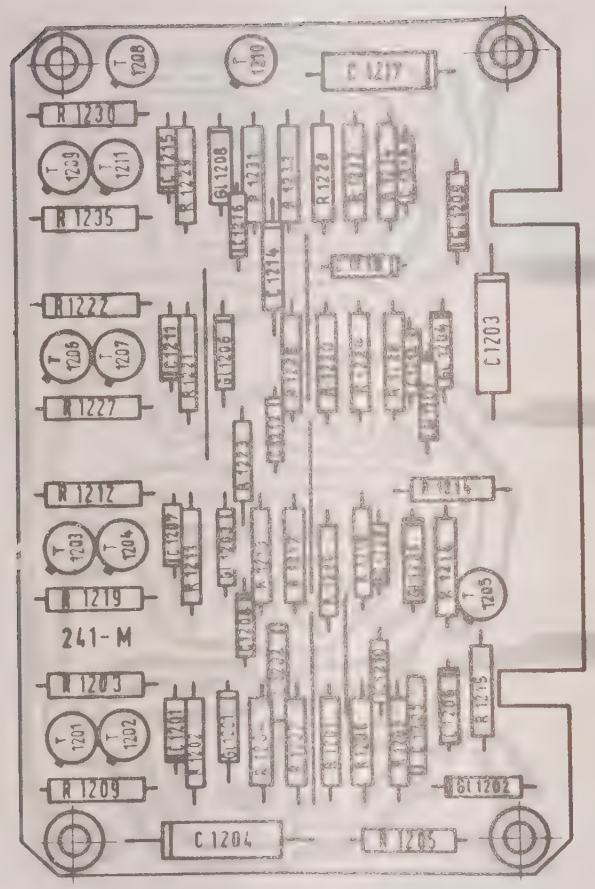


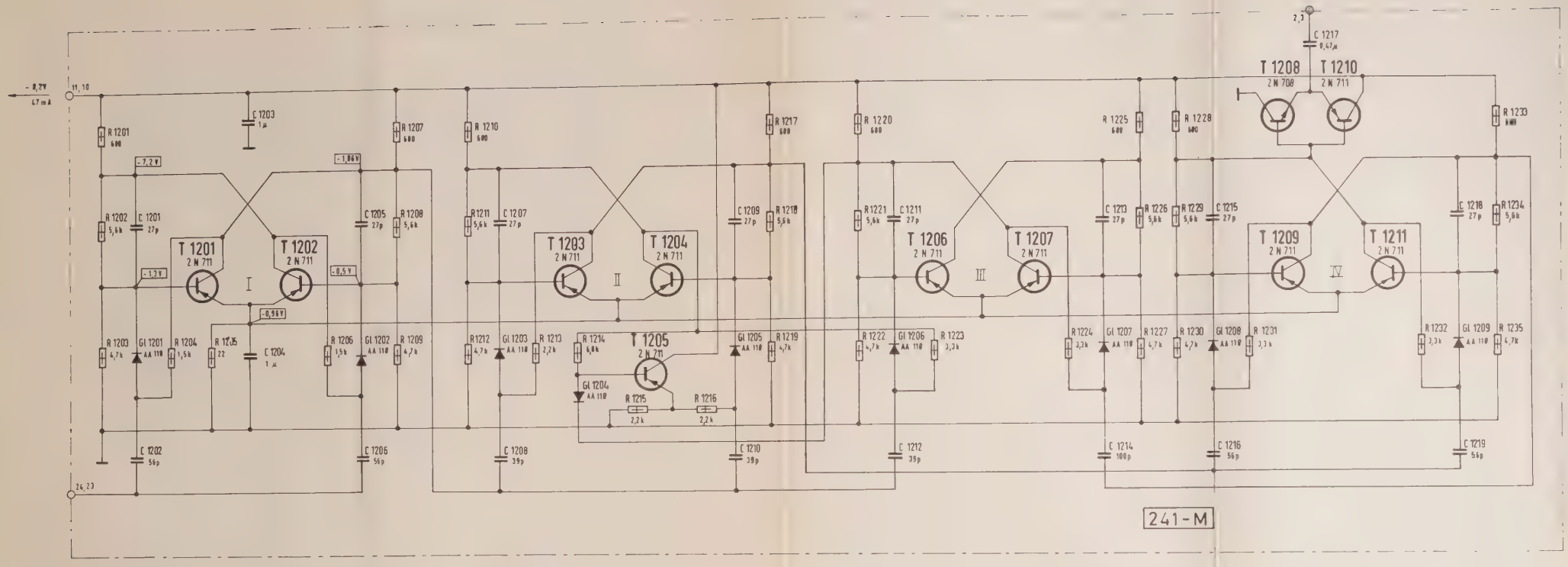


RWO-5/BN 241

Trennstufe z. Normalfrequenz (11)

(Standard Frequency Buffer-Stage)


T 1208
T 1210
C 1217
R 1230
T 1209
T 1211
R 1235
C 1235
R 1224
C 1208
R 1231
R 1233
R 1228
R 1227
R 1216
C 1214
R 1218
R 1208
C 1203
R 1222
T 1206
T 1207
R 1227
C 1211
R 1221
C 1206
R 1223
R 1212
R 1210
R 1213
R 1209
R 1214
R 1217
R 1212
T 1205
R 1215
C 1202
R 1202
C 1201
R 1201
R 1204
C 1205
R 1207
C 1207
R 1211
C 1204
R 1203
T 1203
T 1204
R 1219
241-M
R 1203
T 1201
T 1202
R 1209
C 1204
R 1205



connecting points

Anschlußpunkte		
Punkt	bei 12a nach	bei 12b nach
2,3	⑪ 5 (AW)	⑪ 9 (AW)
11,10	⑪ 7 (AW)	⑪ 8 (AW)
24,23	⑪ 3 (AW)	⑪ 10 (AW)

two for each instrument — Pro Gerät 2x

Flip-Flop	I				II				III				IV			
T	1201		1202		1203		1204		1206		1207		1208		1209	
Gl	1201			1202				1205	1206			1207				1209
input pulse Eingangsimpulse 0	+	+	-		+	+	-	-		+	-	-	+	+	-	-
1	-	-	+	+	+	+	-	-	-	+		-	+	+	-	
2	+	+		-	-	-	+	+	+	+	-		+	+		-
3	-		+	+	-		+	+	+	+	-	-	+	+	-	-
4	+	+	-	-	-	-	+	+	+	-	+	+	+	+	-	
5	-	-	+	+	-	-	+	+	+	-	+	+	+	+		-
6	+	+		-	+	+	-	+	-	-	+	+			+	+
7	-	-	+	+	+	+	-	+	-	-	+	+	-		+	+
8	+	+		-	-	-	+	+	+	-	+	+	-	-	+	+
9	-	-	+	+	-	-	+	+	+	-	+	+	-	-	+	+
10	+	+	-	-	+	+	-	-	-	+	-	-	-	+	-	+

\+ = Transistor, Diode stromführend — transistor or diode conducting

– = Transistor, Diode gesperrt — transistor or diode non-conducting

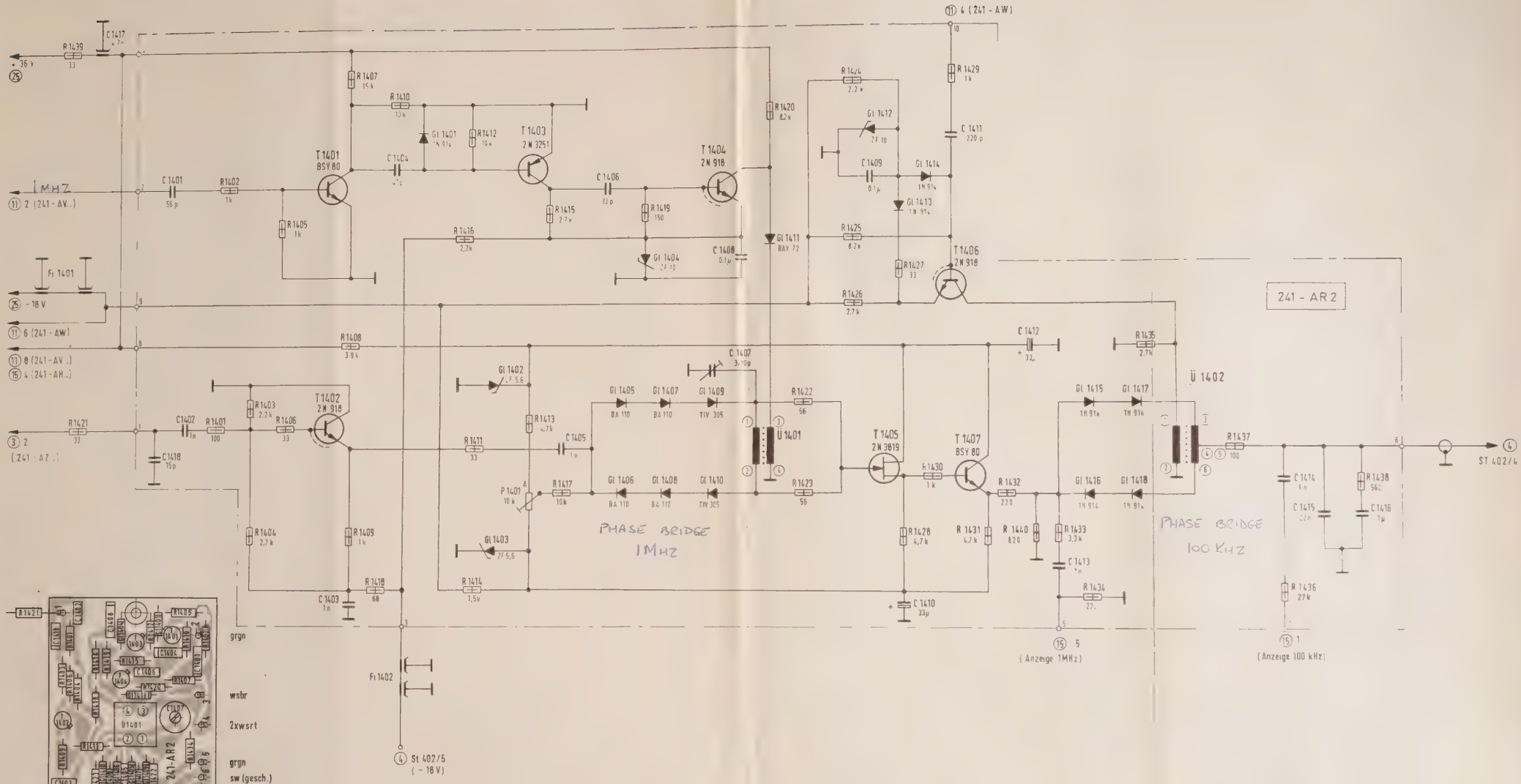
RWO-5/BN 241

Frequenzteiler 10:1 (12a) (12b)

(Frequency Divider)

gr
R 1320
Gl 1301
Gl 1303
T 1305
R 1315
T 1307
Gl 1304
R 1316
R 1311
C 1308
C 1312
R 1321
R 1312
Gl 1302
R 1309
T 1306
C 1309
R 1310
C 1306
R 1305
C 1307
R 1306
R 1307
T 1302
R 1304
C 1304
T 1301
R 1313
C 1310
C 1311
L 1302
T 1303
R 1308
R1317
R 1318
Qu 1301
241-AK
C 1303
R1303
L1301
C1302
R 1311
R 1319
T 1306
gr

gr
10
T 1311
R 1333
R 1334
R 1332
C1315
R 1326
R 1323
R 1322
C 1313
241-AL
R 1331
R 1324
C 1316
T 1310
C 1314
R 1330
R 1328
R 1325
T 1308
T 1309
R 1327
R 1336
R 1329
C 1318
R 1335
L 1303
C 1317
gr
gr

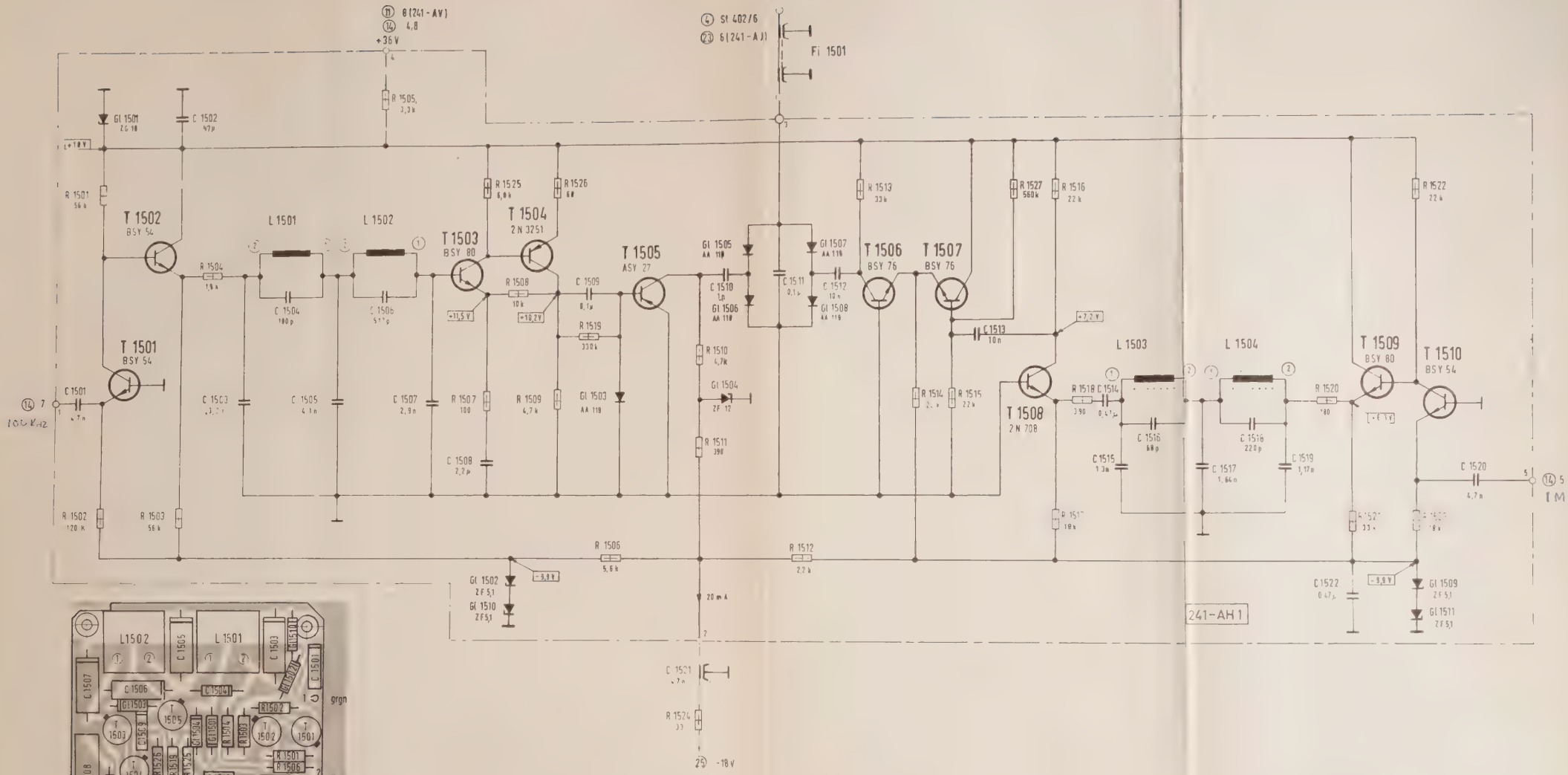


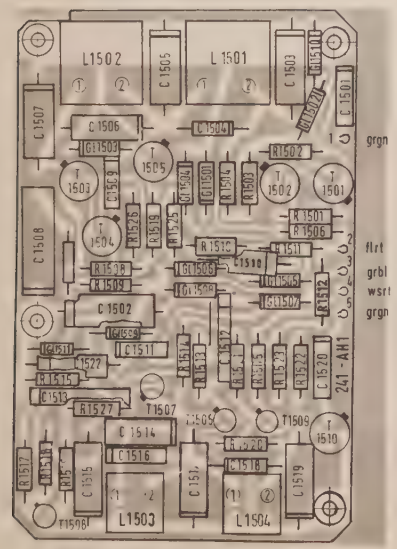
RWO-5/BN 241

Phasenmesser (14)

Phase Meter

FOR SERIES I AND ABOVE

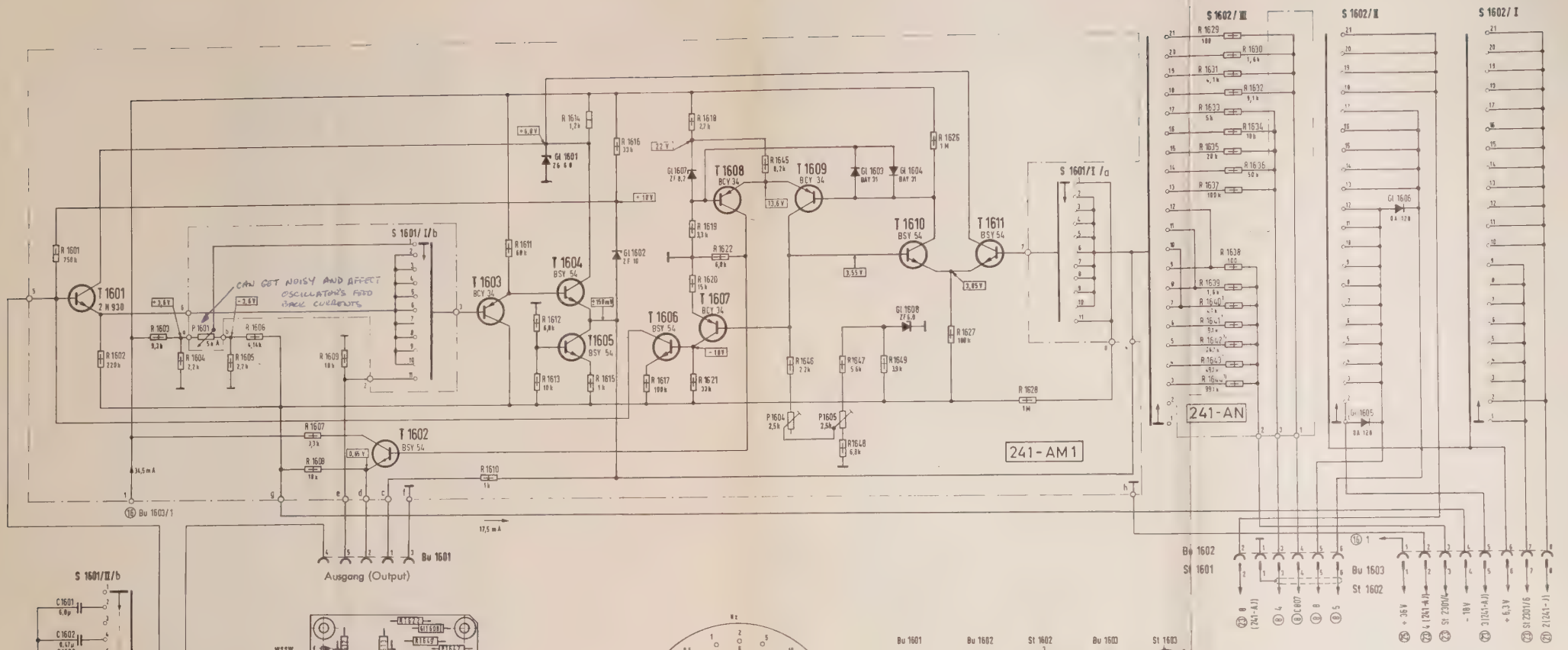


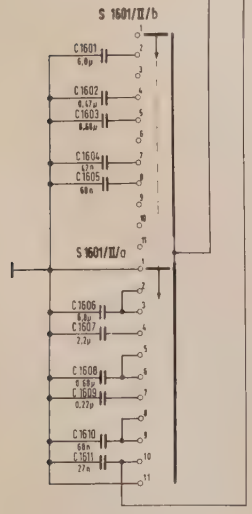


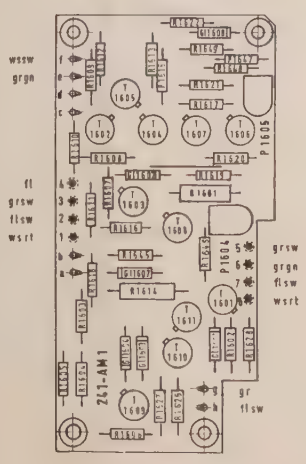
RWO-5/BN 241

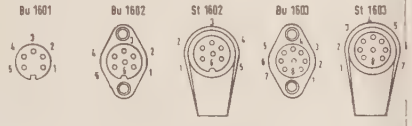
Fanganzeige-Verstärker (15)

Lock-In Indication Amplifier









Meßwerte bei S 1601 in Stellung 11, ohne Eingangsspannung

Measured values for S 1601 in position 11 in absence of input voltage

Serienänderungen (Series mods) :

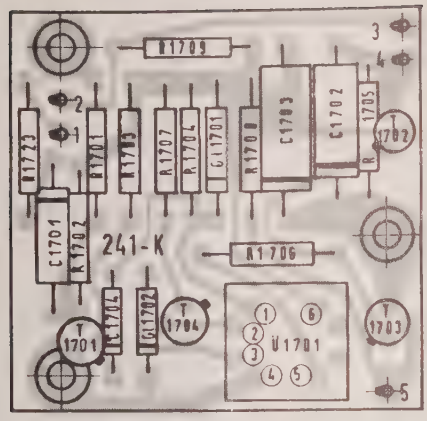
1) Serie (Series) F : R 1640 / 3,9 k
R 1641 / 10 k
R 1642 / 25 k
R 1643 / 50 k
R 1644 / 100 k

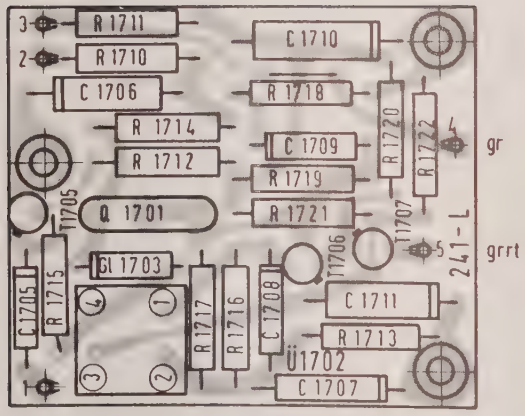
RWO-5/BN 241

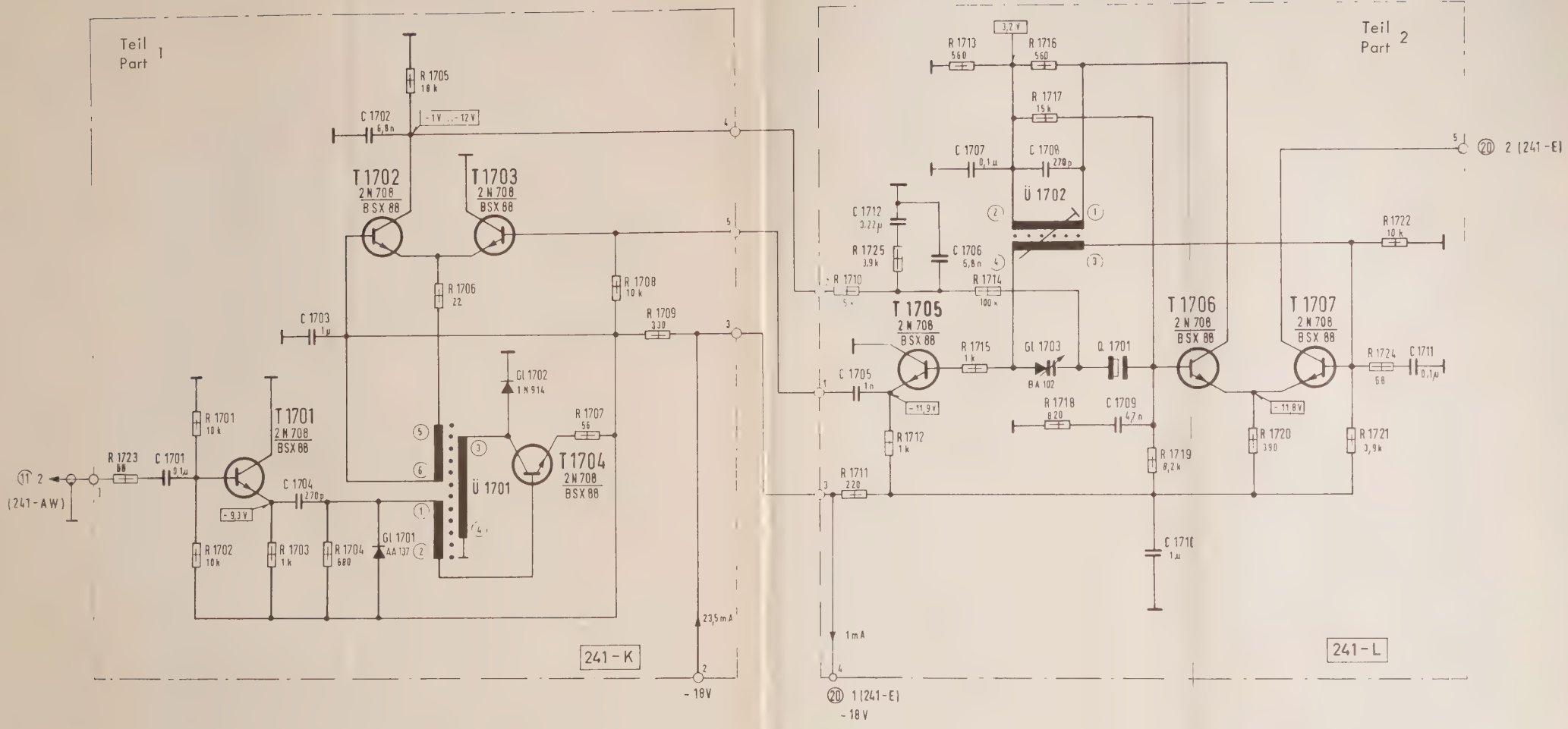
Sägezahngenerator (6)

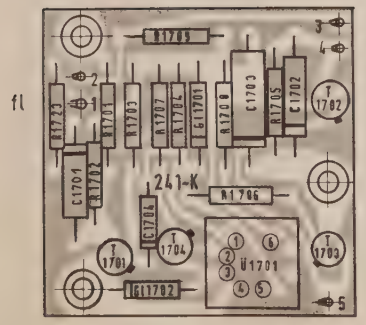
(Sawtooth Generator)

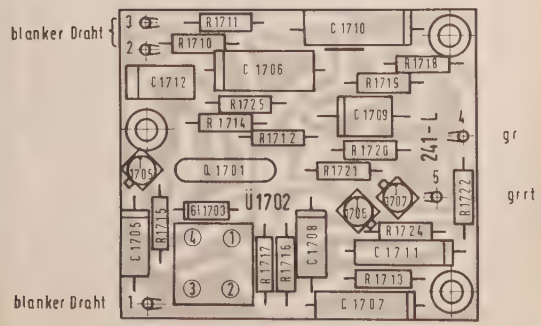
fl


R1709
3
4
2
1
R1723
R1701
R1705
R1707
R1704
C11701
R1708
C1703
C1702
1705
1702
C1701
R1702
241-K
R1706
1701
1704
1703
Ü1701
5


3
2
R 1711
R 1710
C 1706
R 1714
R 1712
C 1710
R 1718
C 1709
R 1719
R 1721
R 1720
R 1722
4
gr
grrt
5
241-L
T1705
Q 1701
T1707
T1706
GL 1703
C1705
R 1715
R 1717
R 1716
C 1708
C 1711
R 1713
Ü1702
C 1707
1



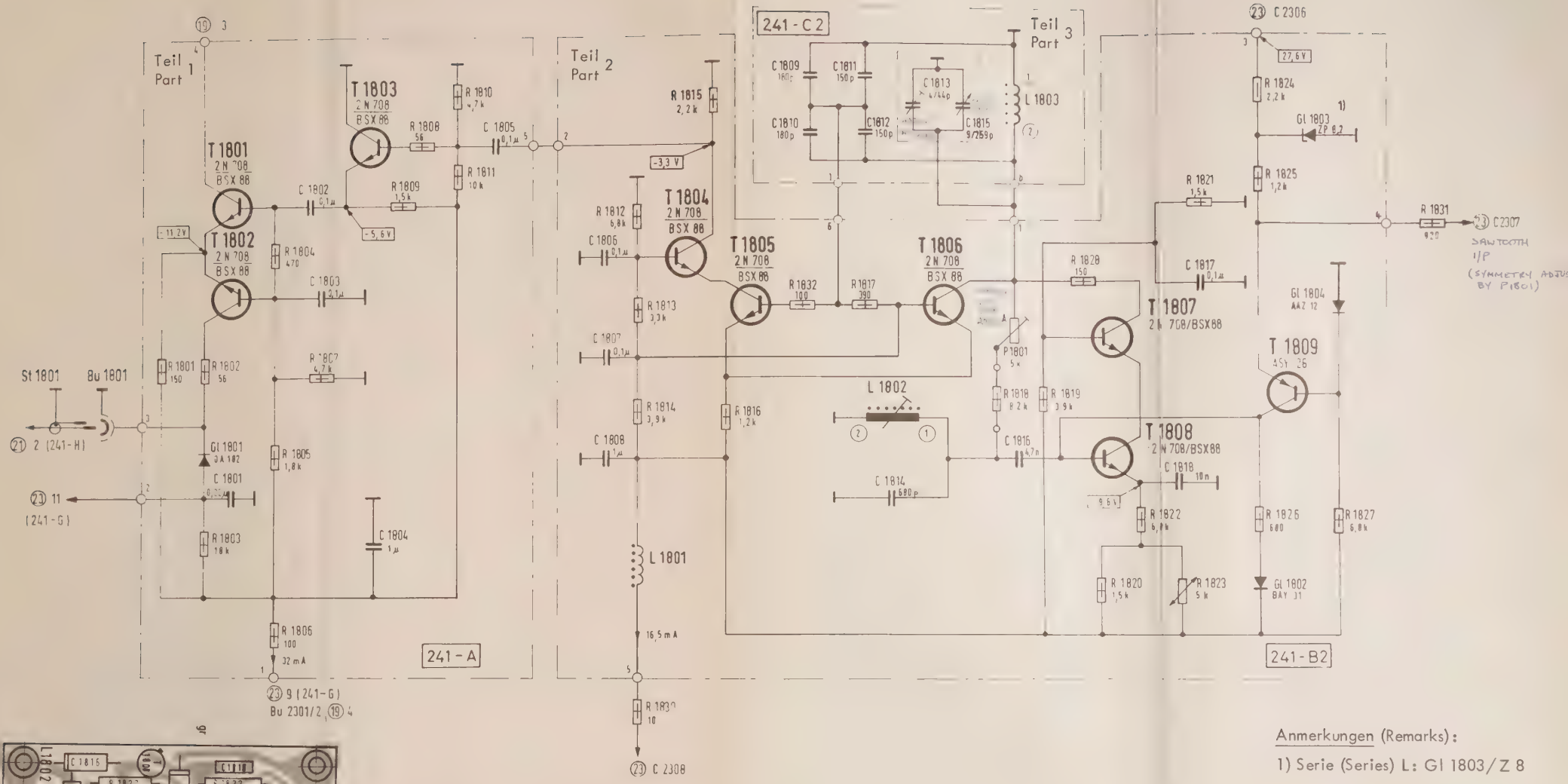


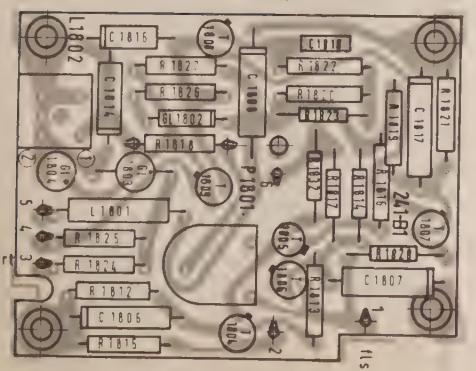


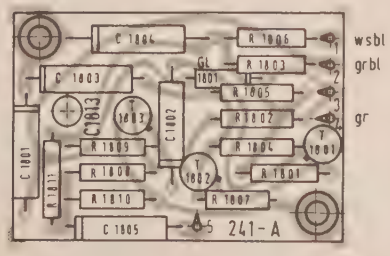
RWO-5 BN 241 (17)

2,7-MHz-Oszillator

2.7 MHz Crystal Oscillator







Anmerkungen (Remarks):

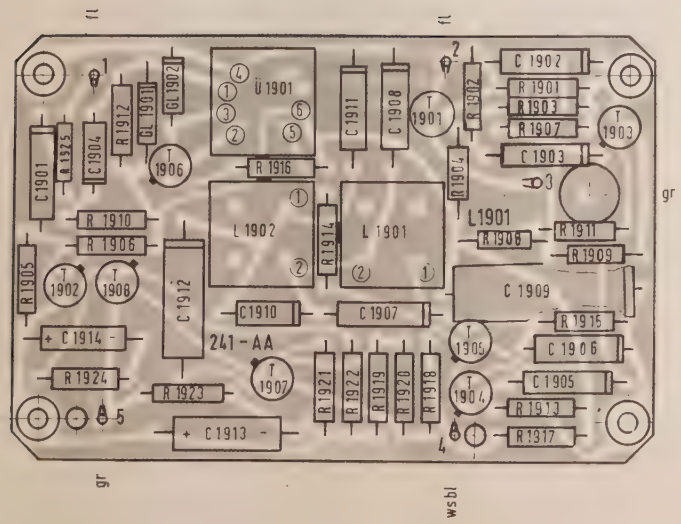
1) Serie (Series) L: Gl 1803/Z 8

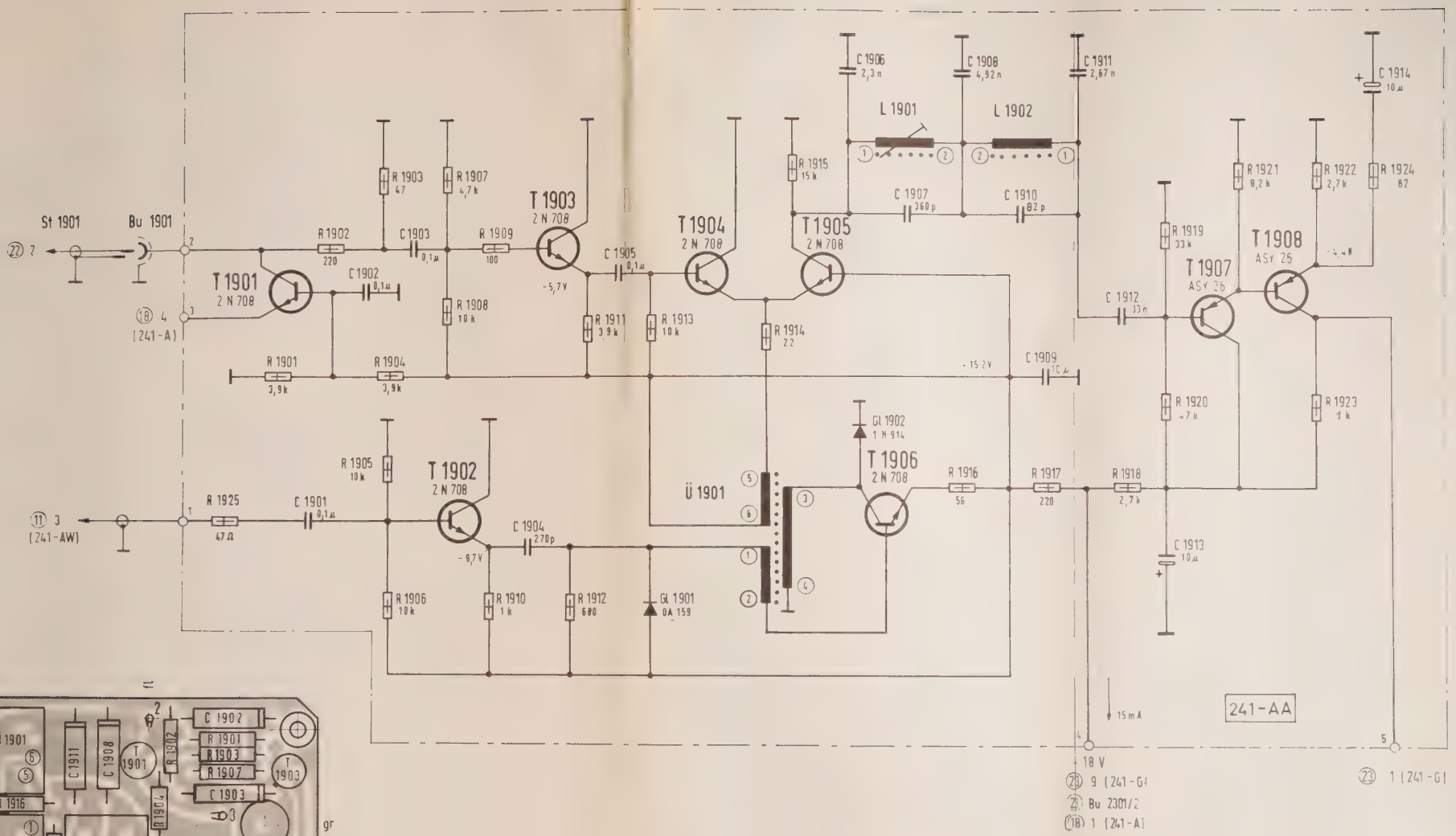
RWO-5 BN 241

Interpolationsoszillator (18)

Interpolation Oscillator (FINE)

ab Serie (from series) L

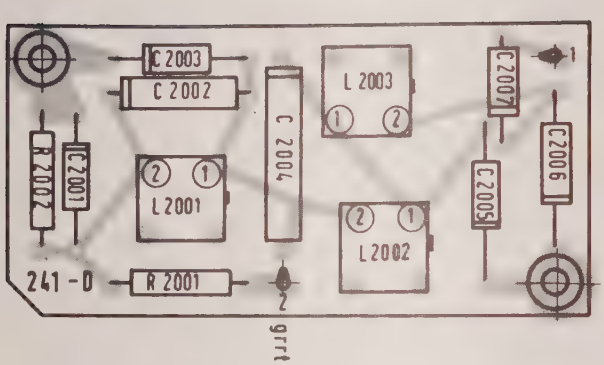


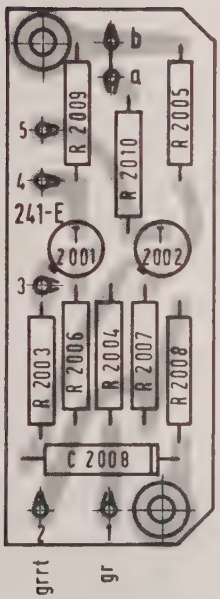


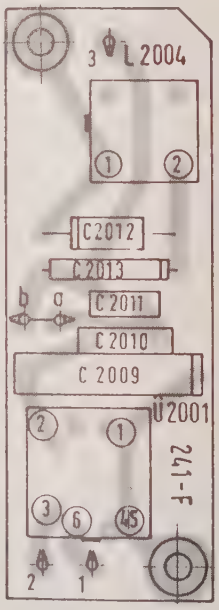
RWO-5/BN 241

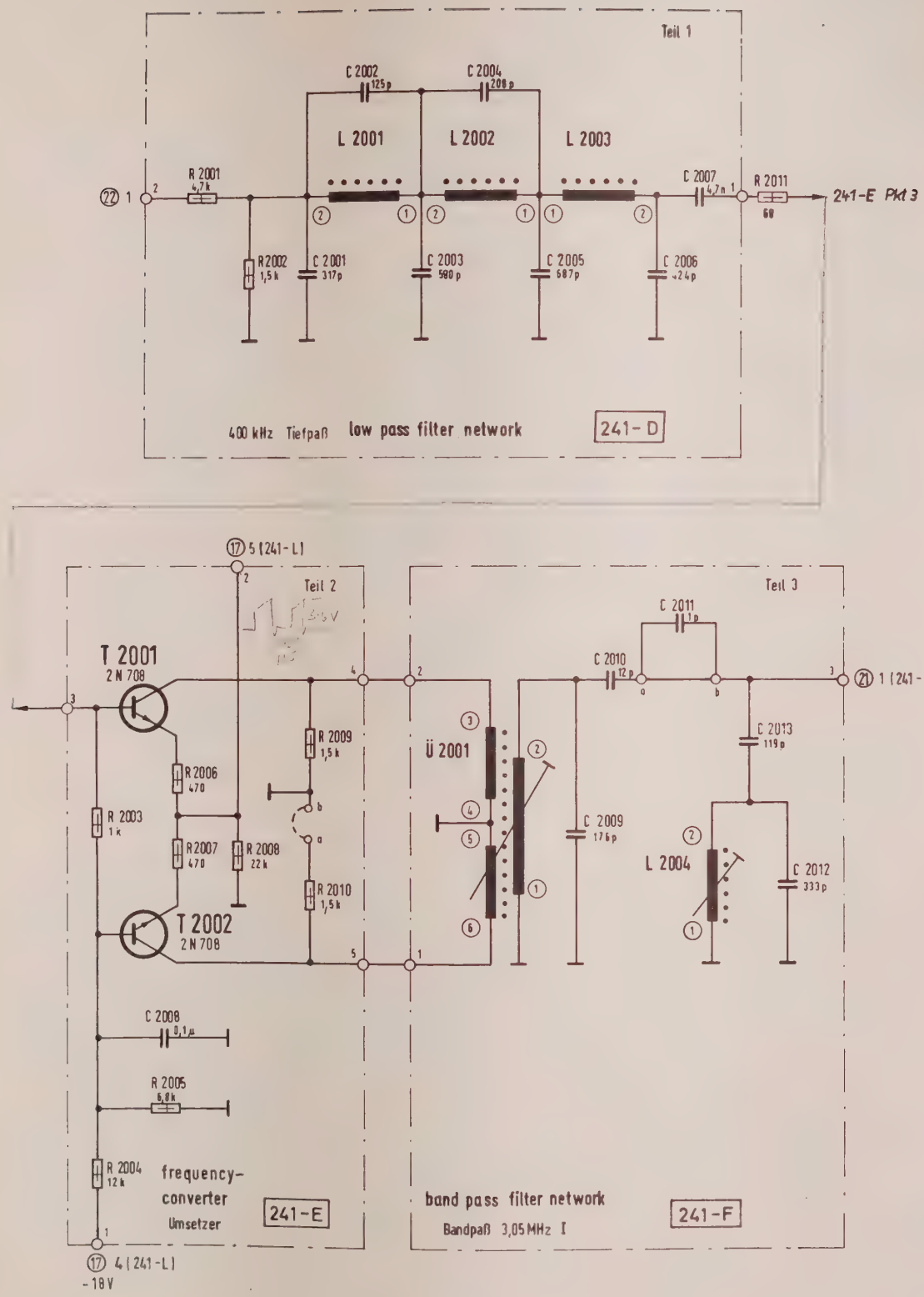
Abstimmanzeige (19)

Tuning Indicator Network


C 2003
C 2002
L 2003
C 2007
C 2004
C 2001
C 2005
C 2006
L 2001
L 2002
241 - D
R 2001
grrt


b
a
5
R 2009
R 2010
R 2005
4
241-E
2001
2002
3
R 2003
R 2006
R 2004
R 2007
R 2008
C 2008
2
grrt
gr

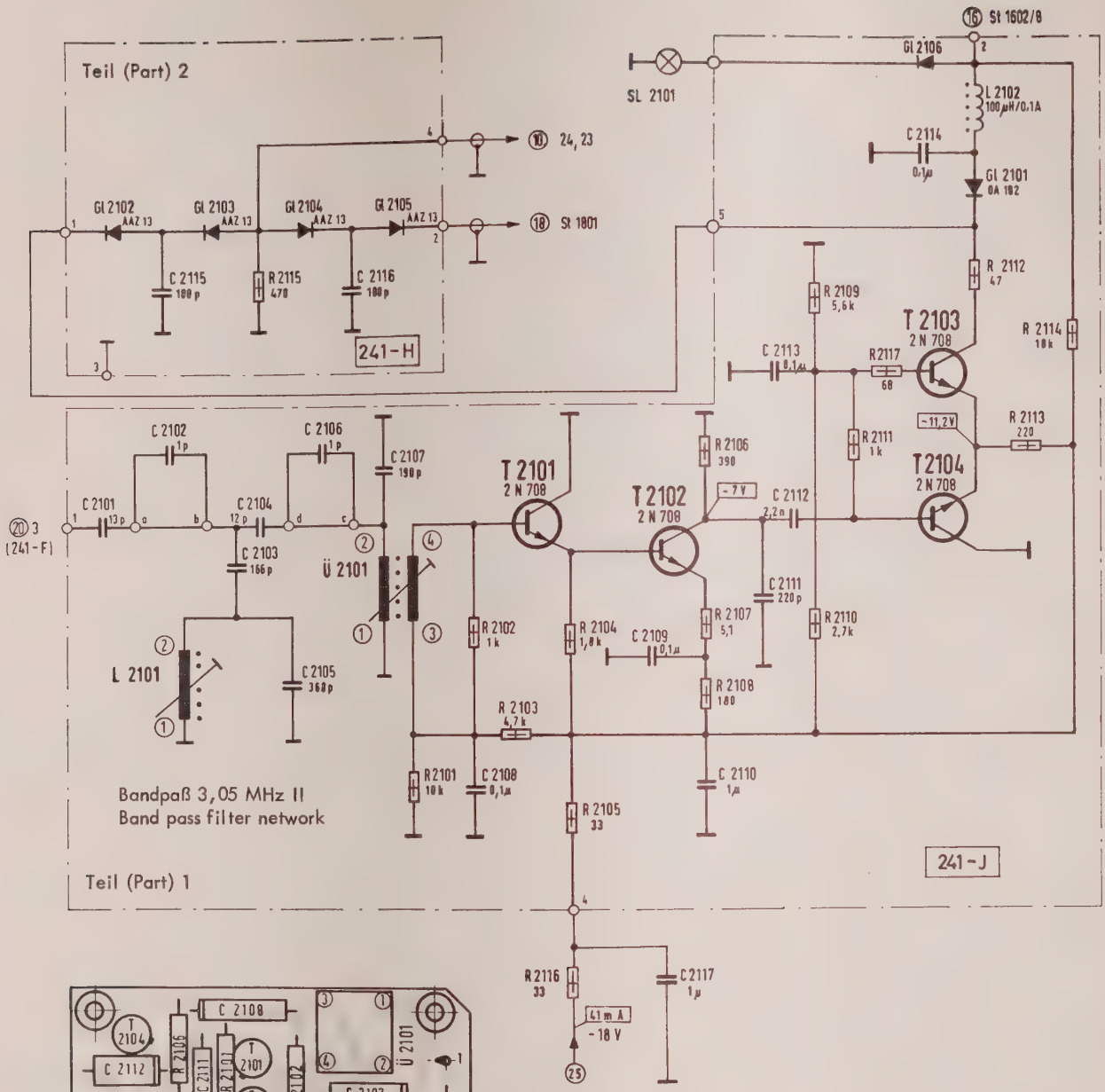

3
L 2004
C 2012
C 2013
b
a
C 2011
C 2010
C 2009
U 2001
241-F
3
6
45
2
1

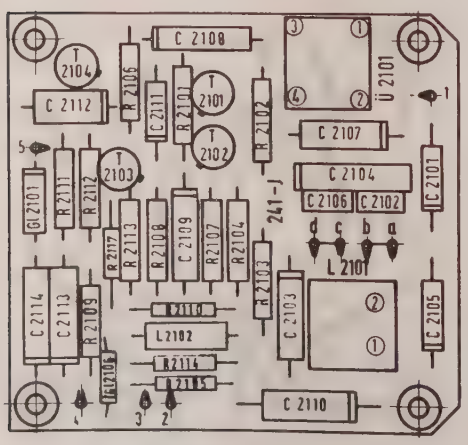


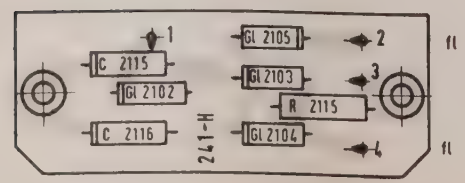
RWO-5/BN 241

Umsetzer (20)

(Frequency Converter)



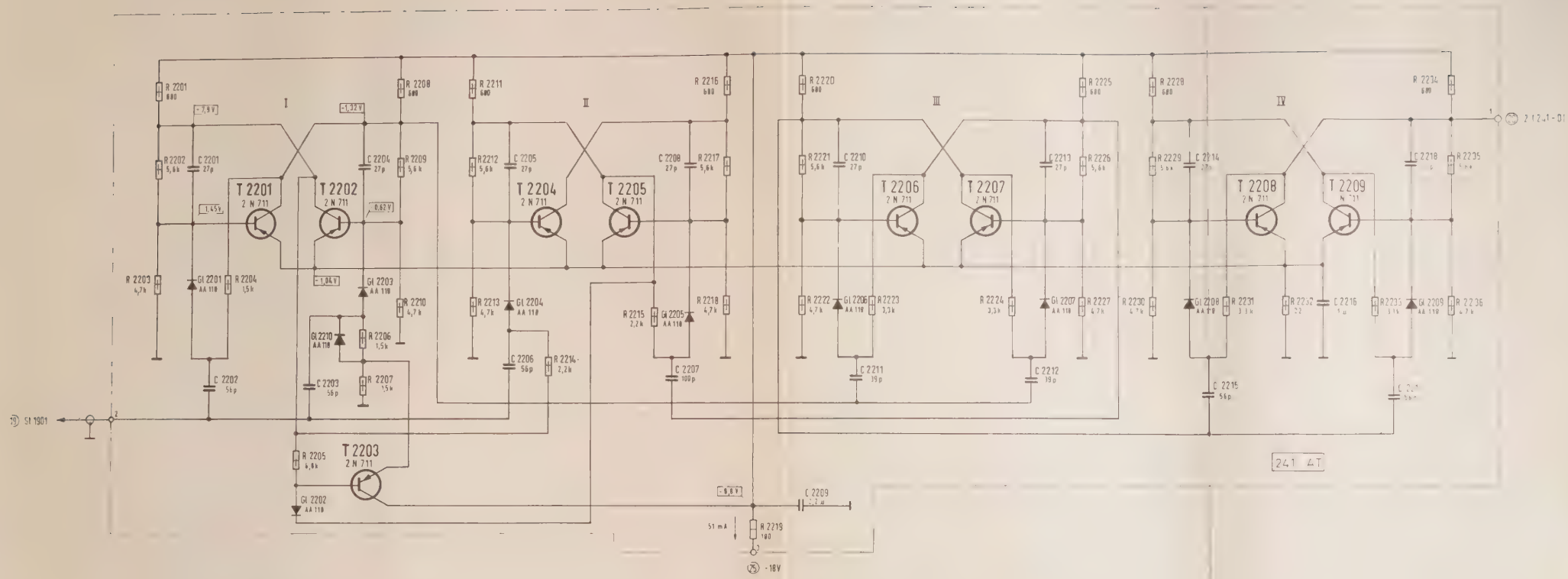


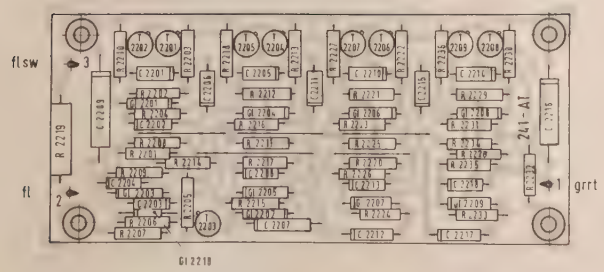


RWO-5/BN 241

Trenn- und Schaltstufe (21)

(Buffer and Switching Stage)

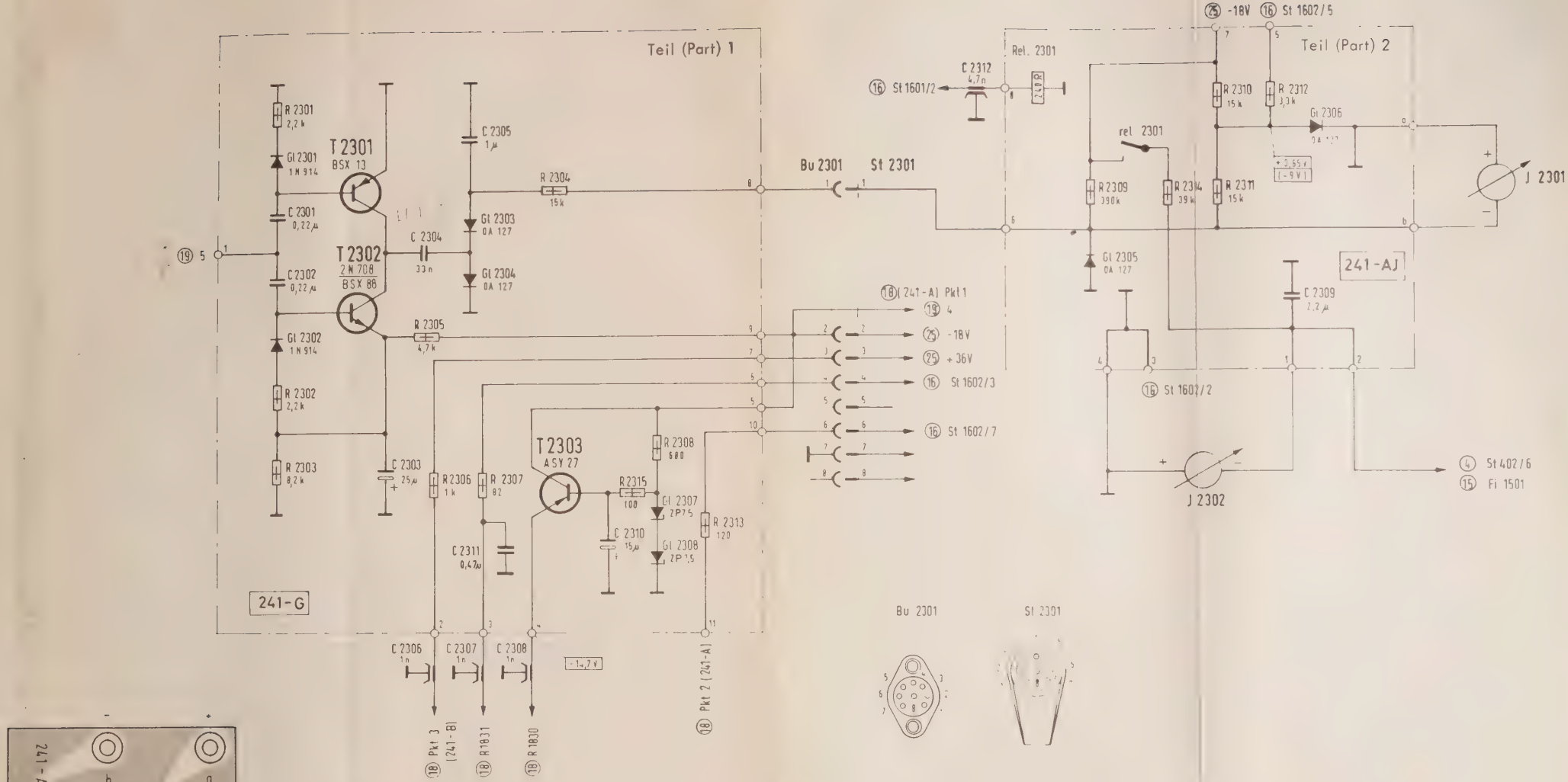


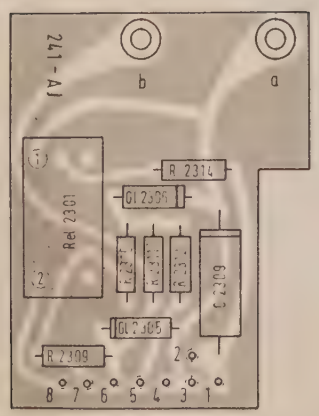


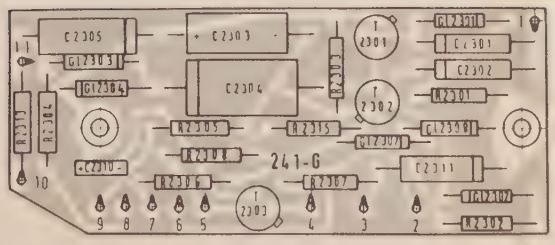
Flip-Flop		I				II				III				IV			
T		2201		2202		2204		2205		2206		2207		2208		2209	
Gl		2201			2203	2204			2205	2206			2207	2208			2209
Eingangsimpulse Input pulse	0	+	+	-	-	-	+	-	-	+	+			+	+		
	1	-	+	-		+	+	-	-	+	+		-	+	+	-	-
	2	-	-	+	+	+	-	+	+	+	+		-	+	+	-	-
	3	+	+	-	-		-	+	+	-	-	+	+			+	+
	4	-		+	+	+	-	+	+	-		+	+			+	+
	5	+	+	-	-	-	+	-	-	+	+	-	-	-		+	+
	6	-	-	+	-	+	+	-	-	+	+	-	-	-	-	+	+
	7	-	-	+	+	+	-	+	+	+	+	-	-	-	-	+	+
	8	+	+	-	-	-	-	+	+	-	-	+	+	+	+	-	-
	9		-	+	-	+	-	+	+			+	+	+	+	-	-
	10	+	+	-	-	-	+	-	-	+	+	-	-	+	+	-	-

\+ = Transistor, Diode stromführend (Transistor or Diode conducting)
\- = Transistor, Diode gesperrt (Transistor or Diode non-conducting)

RWO-5/BN 241
Teiler 10 : 1 (22)
Frequency Divider



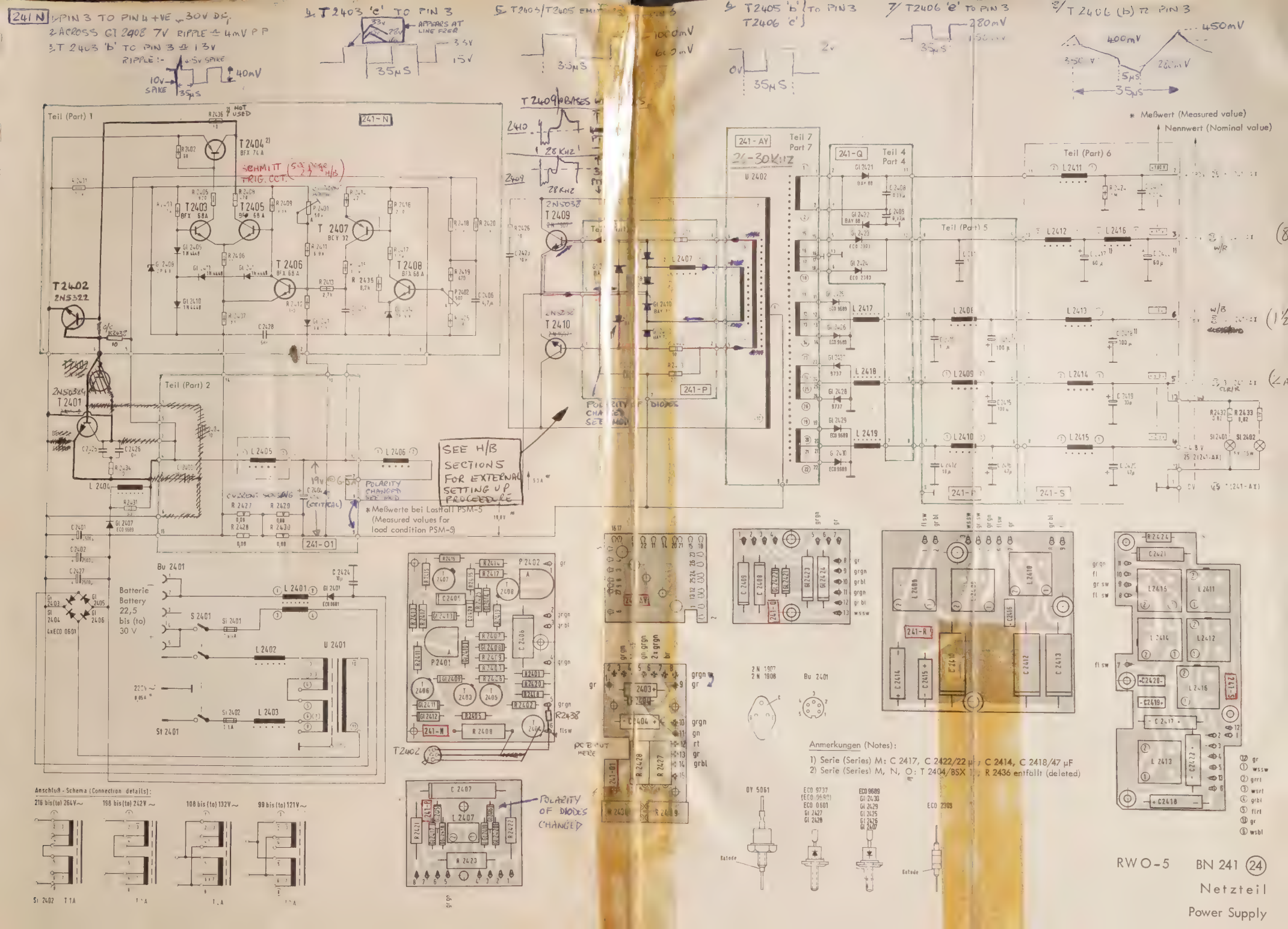


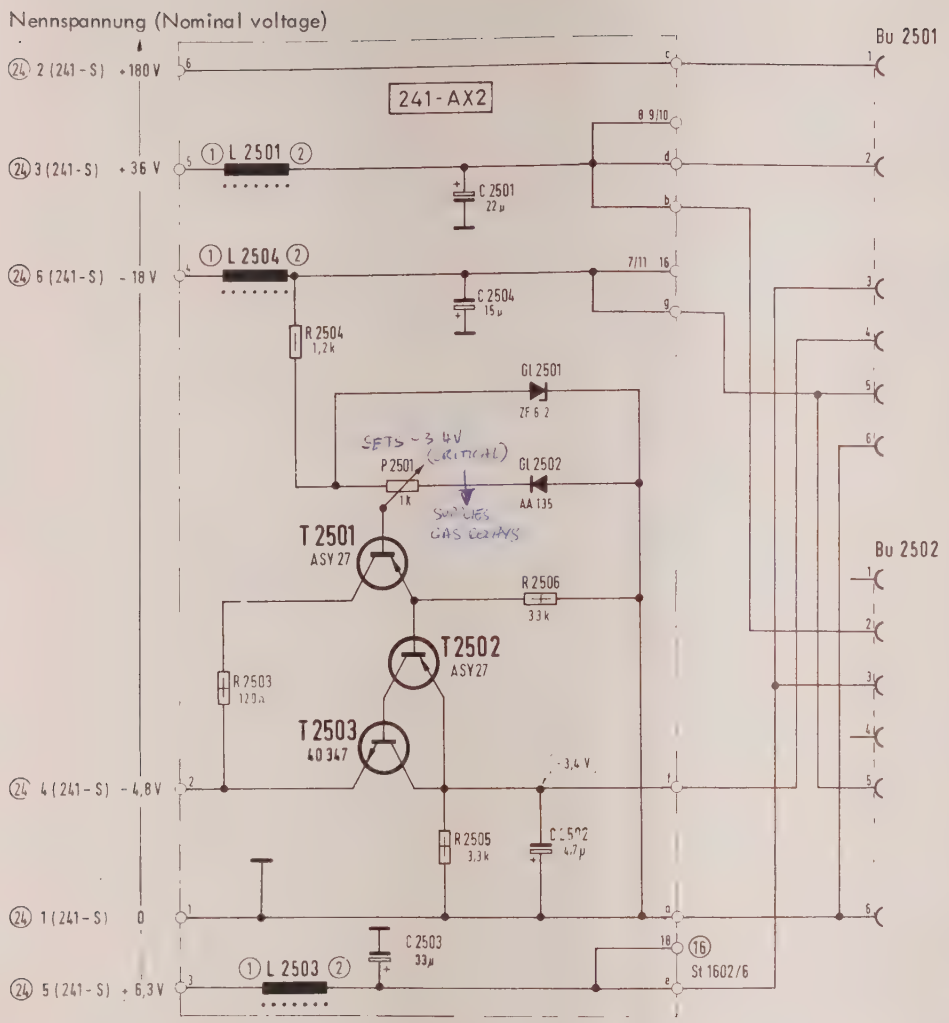


RWO-5 BN 241 (23)

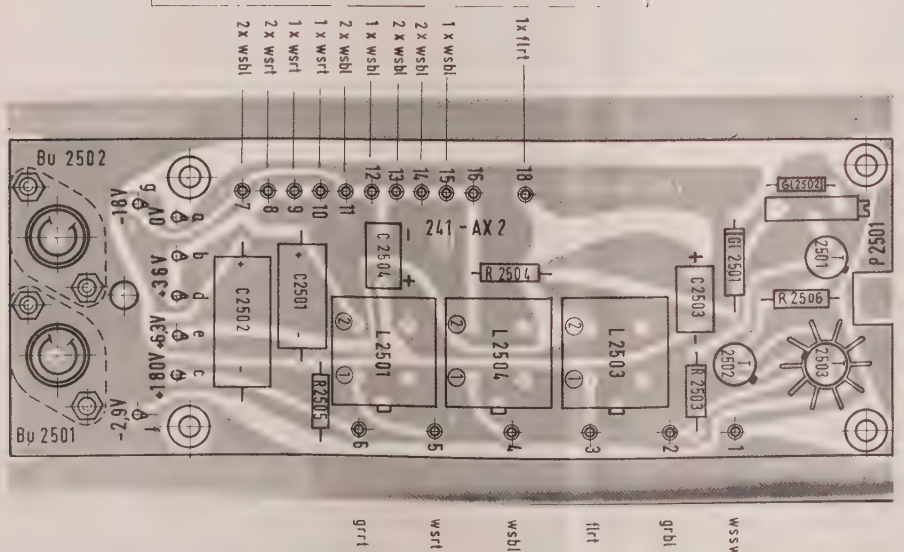
Diskriminator

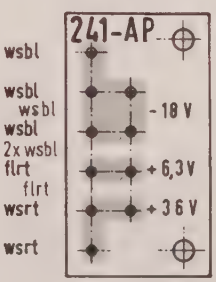
Discriminator


241 N
Teil (Part) 1
Teil (Part) 2
T2402
2N5322
T2401
2N5038
T2403
T2404
T2405
T2406
T2407
T2408
T2409
T2410
SCHMITT TRIG. CCT.
SEE H/B SECTIONS FOR EXTERNAL SETTING UP PROCEDURE
POLARITY CHANGED SEE H/B
POLARITY OF DIODES CHANGED
241-N
241-01
241-M
241-P
241-Q
241-R
241-S
241-AY
Teil 4 Part 4
Teil 5 Part 5
Teil 6 Part 6
Teil 7 Part 7
Batterie Battery 22,5 bis (to) 30 V
Bu 2401
S 2401
SI 2401
SI 2402
L 2401
L 2402
L 2403
L 2404
L 2405
L 2406
U 2401
U 2402
Anschluß - Schema (Connection details):
216 bis (to) 264V~
198 bis (to) 242V~
108 bis (to) 132V~
99 bis (to) 121V~
SI 2402 T1A
Anmerkungen (Notes):
1) Serie (Series) M: C 2417, C 2422/22 µF, C 2414, C 2418/47 µF
2) Serie (Series) M, N, O: T 2404/BSX 1.., R 2436 entfällt (deleted)
* Meßwert (Measured value)
Nennwert (Nominal value)
* Meßwerte bei Lastfall PSM-5 (Measured values for load condition PSM-5)
RWO-5
BN 241 (24)
Netzteil
Power Supply



auf Lötseite gesehen
showing solder tags



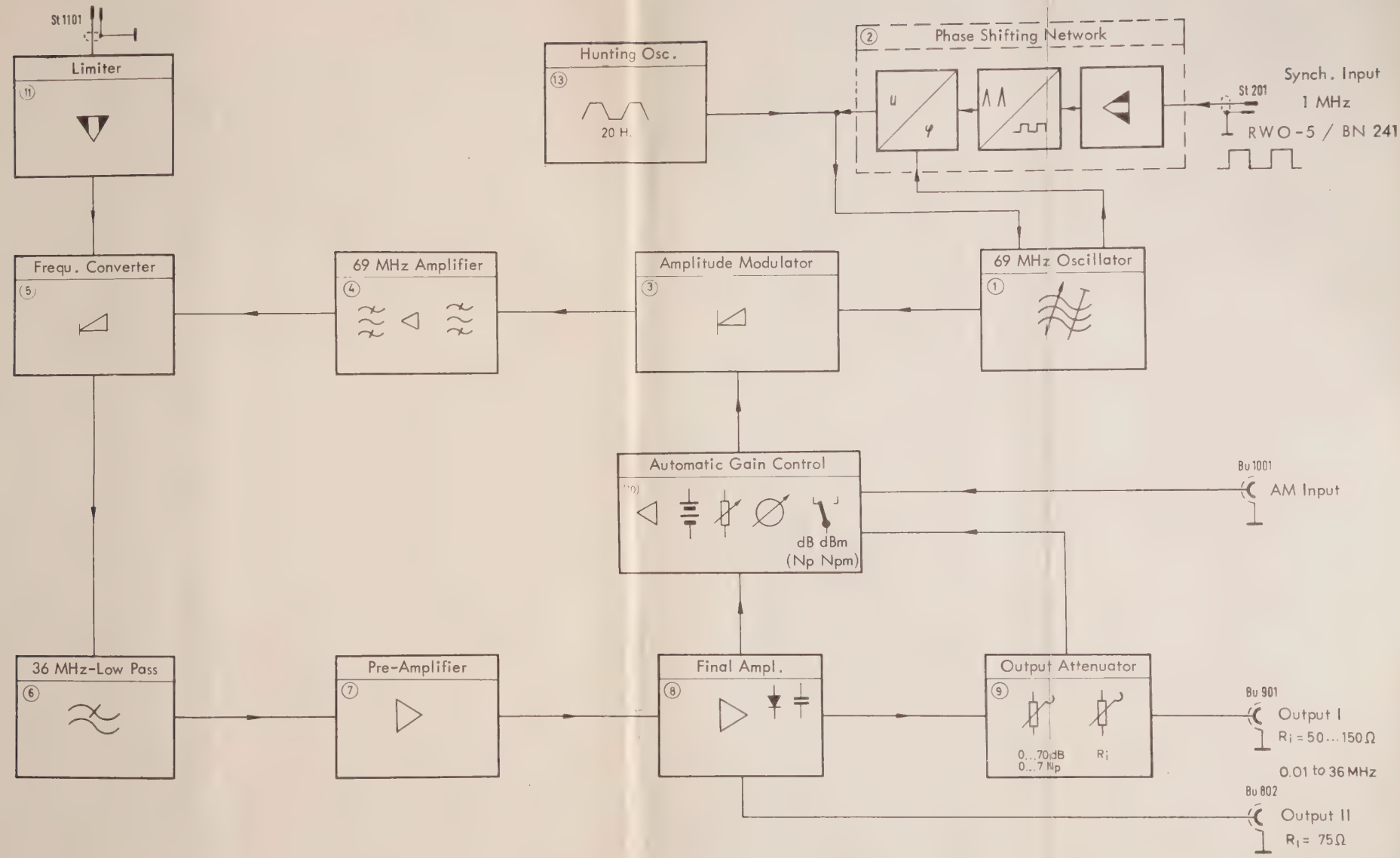


RWO-5/BN 241

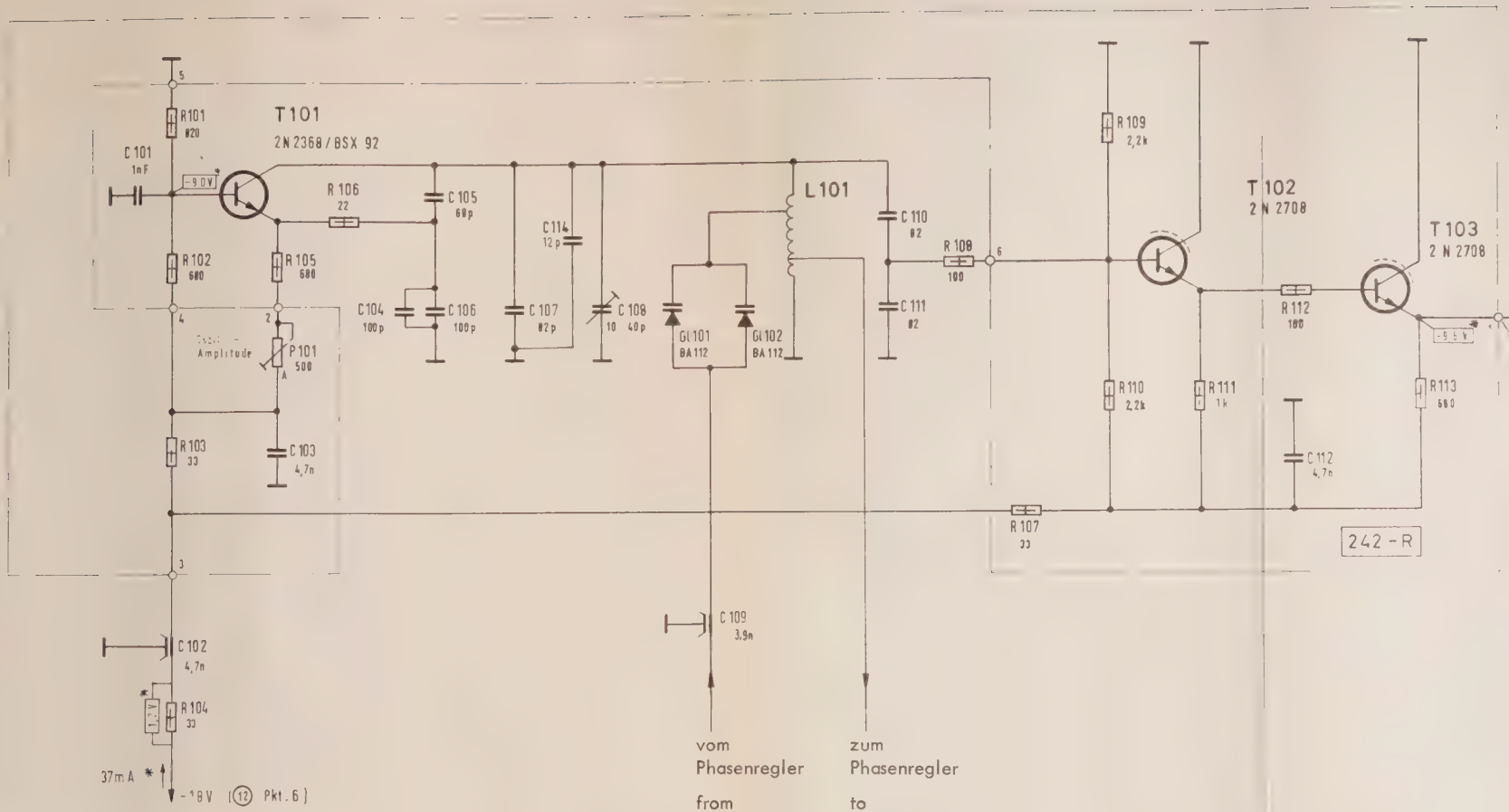
Zusatzsiebung (25)

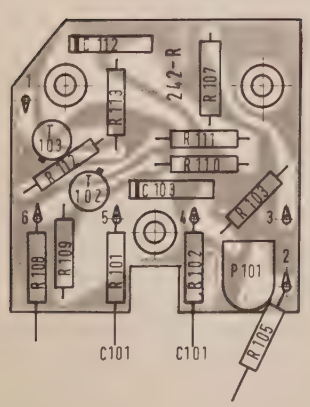
Filter Attachment Network

Carrier Input 69.01 MHz to 105 MHz
RWO-5 / BN 241



PS-5/BN 242
Block Circuit Diagram



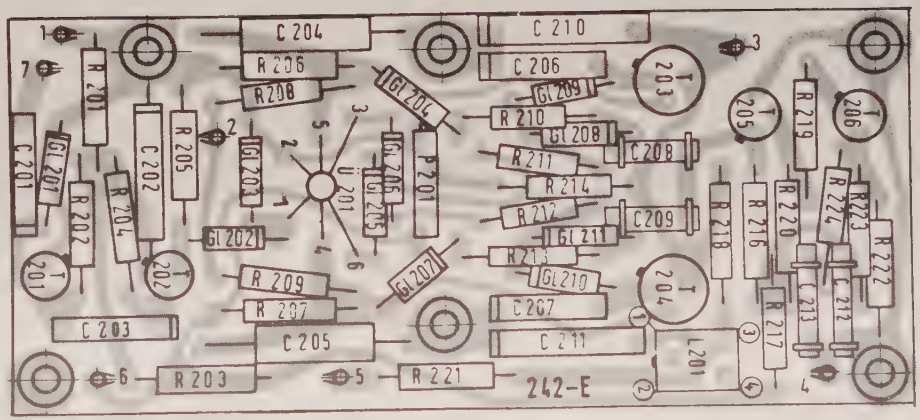


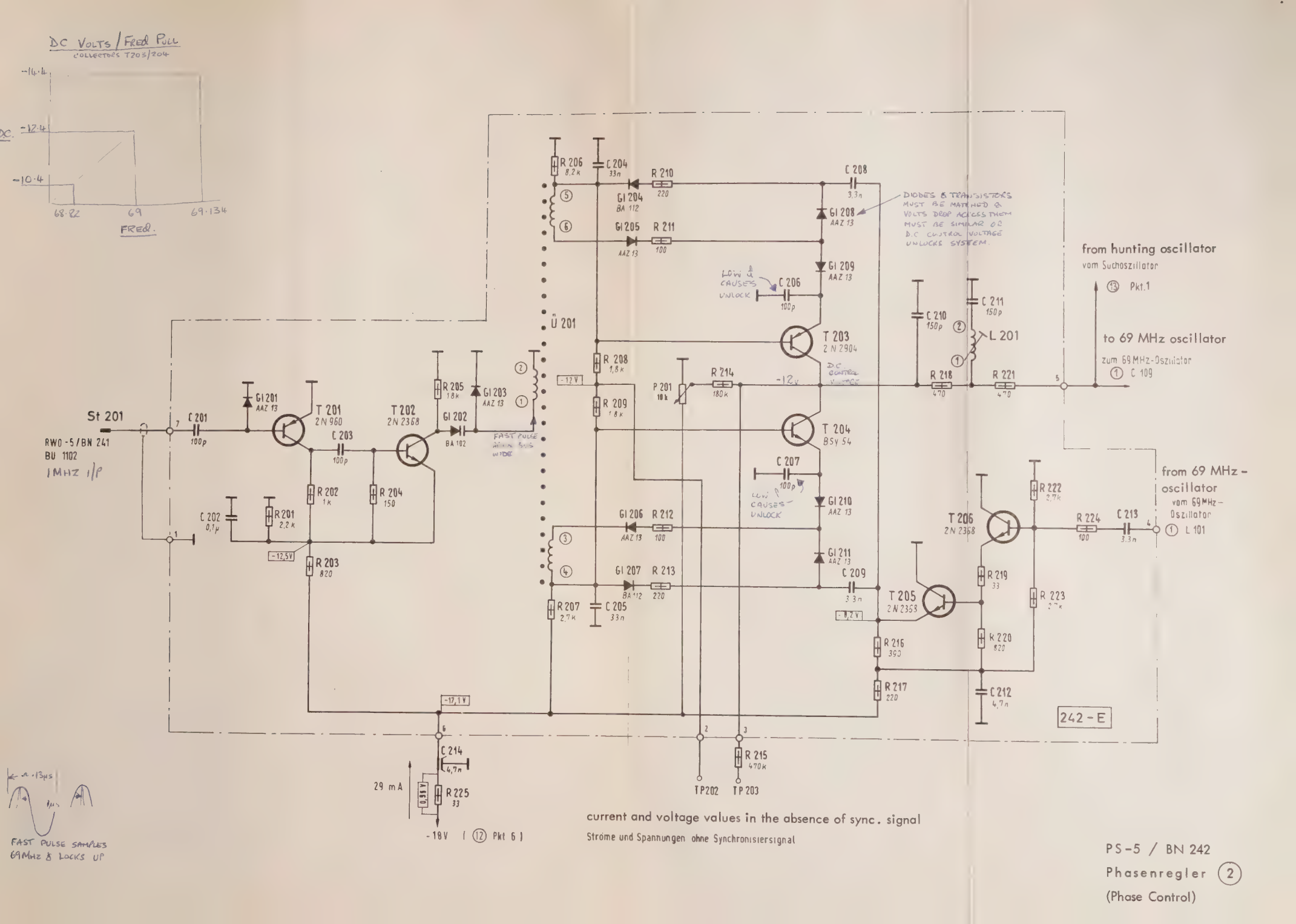
* Spannungen und Ströme bei Schleifer von P 101 auf A.
Current and voltage values for Pot. 101 wiper at A.

PS-5 BN 242

69-MHz-Oszillator ①

69 MHz Oscillator


C 204
R 206
R 208
C 210
C 206
GL 209
R 210
GL 208
C 208
R 211
R 214
R 212
C 209
GL 211
R 213
GL 210
C 207
C 211
L 201
R 217
R 216
R 218
R 220
R 219
R 222
R 223
R 224
C 212
C 213
R 222
I 203
I 205
I 206
I 204
GL 204
P 201
U 201
GL 206
GL 205
GL 207
R 209
R 207
C 205
R 221
R 201
C 202
R 205
R 204
R 202
C 201
GL 201
GL 203
GL 202
I 201
I 202
C 203
R 203
242-E



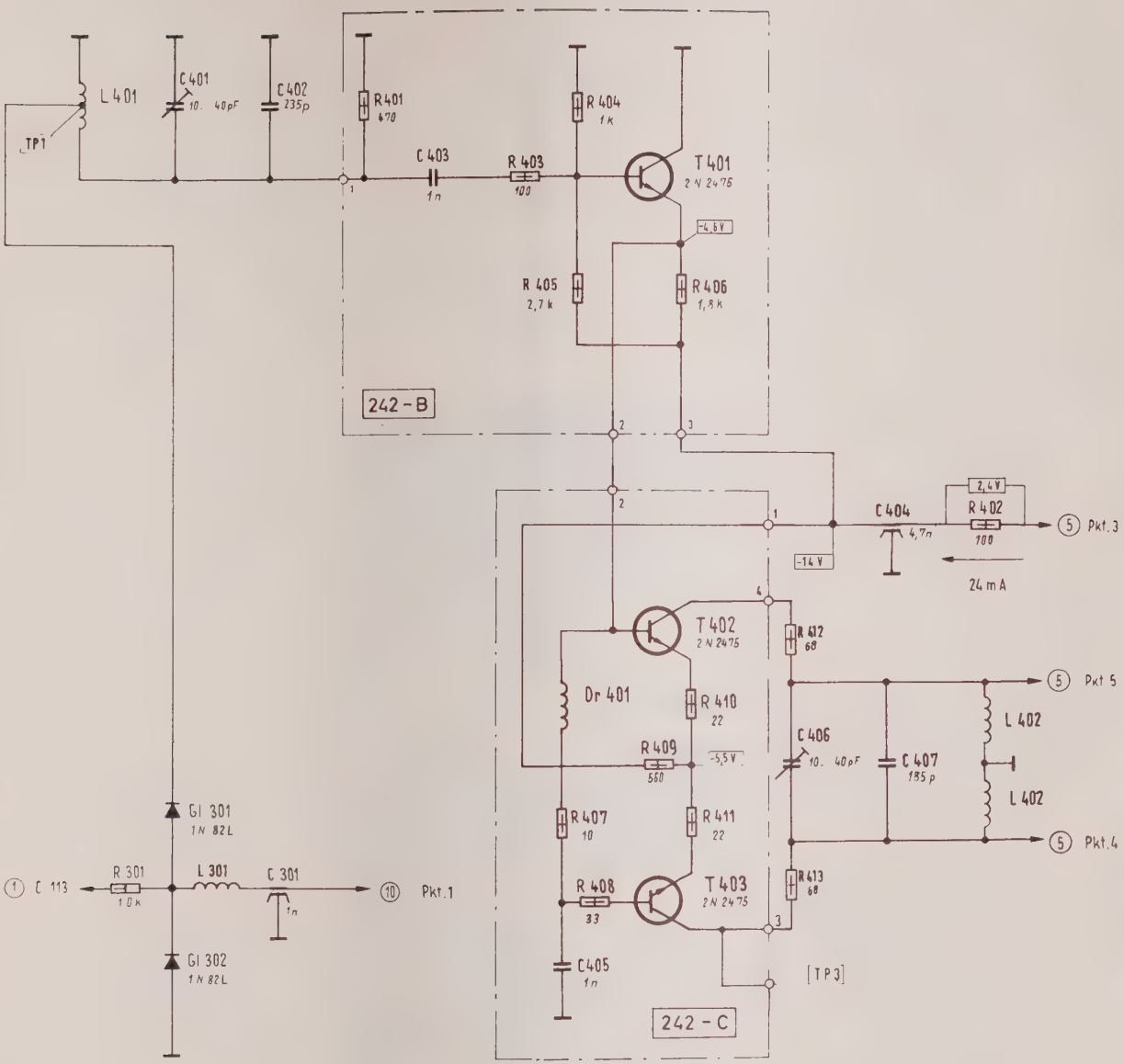
current and voltage values in the absence of sync. signal

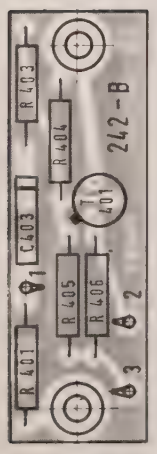
Ströme und Spannungen ohne Synchronisiersignal

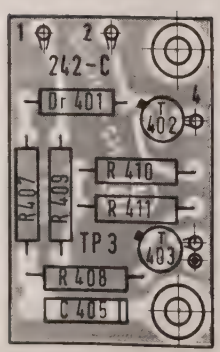
PS-5 / BN 242

Phasenregler (2)

(Phase Control)







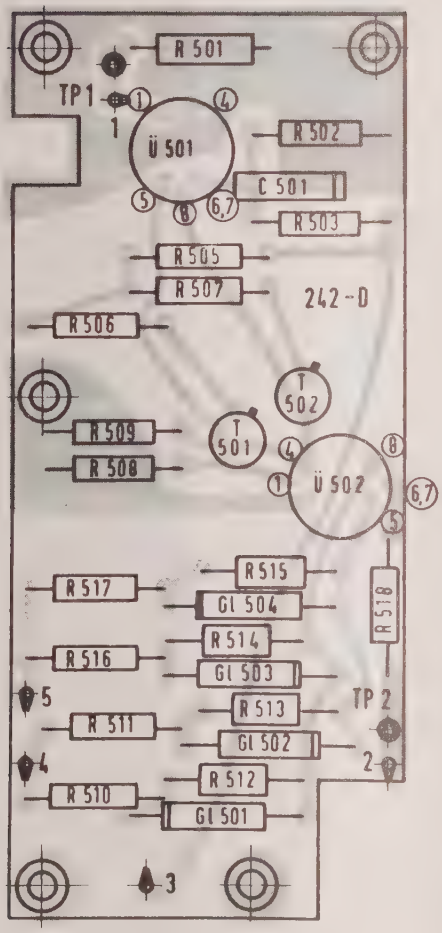
PS-5 BN 242

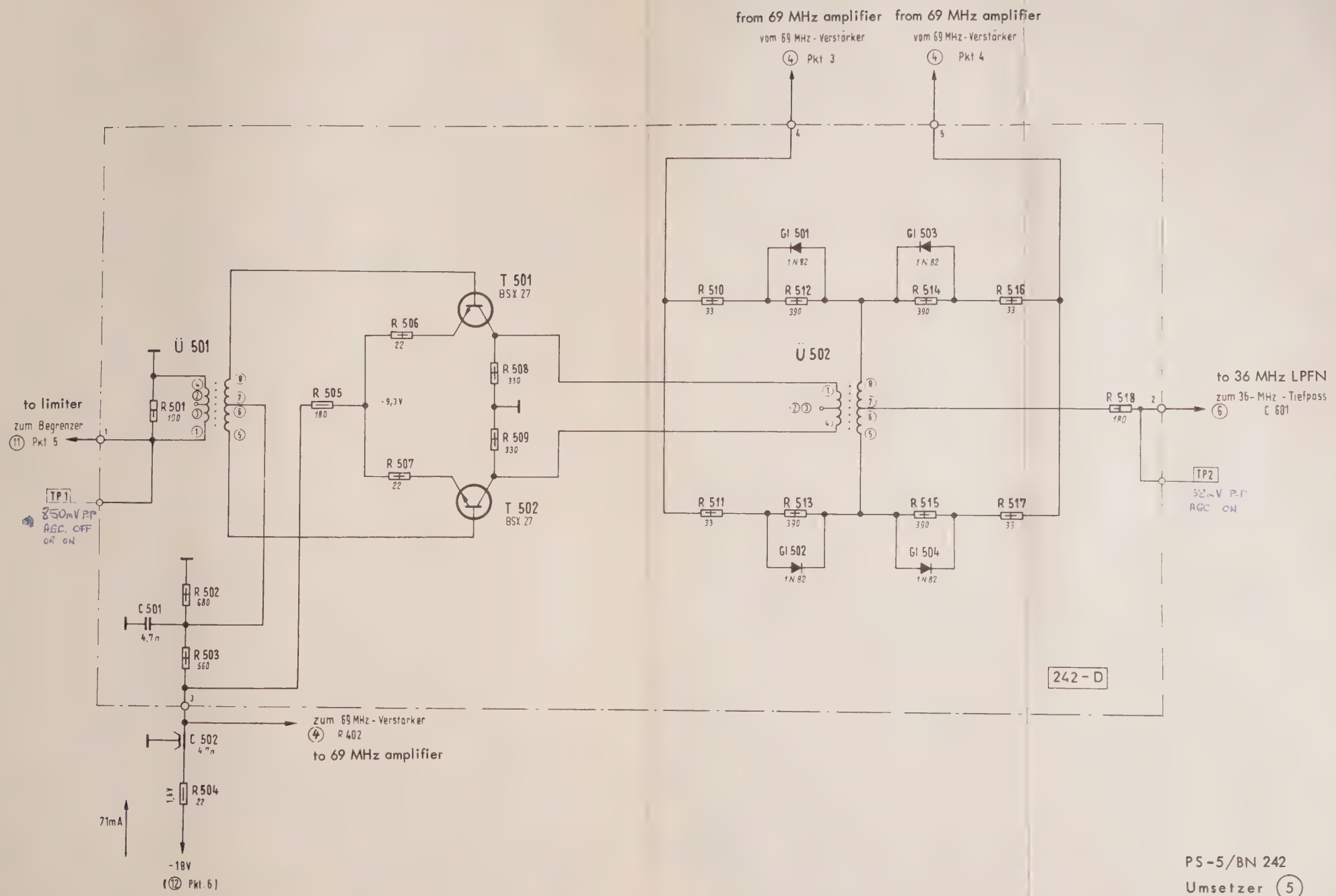
Amplitudenmodulator (3)

Amplitude Modulator

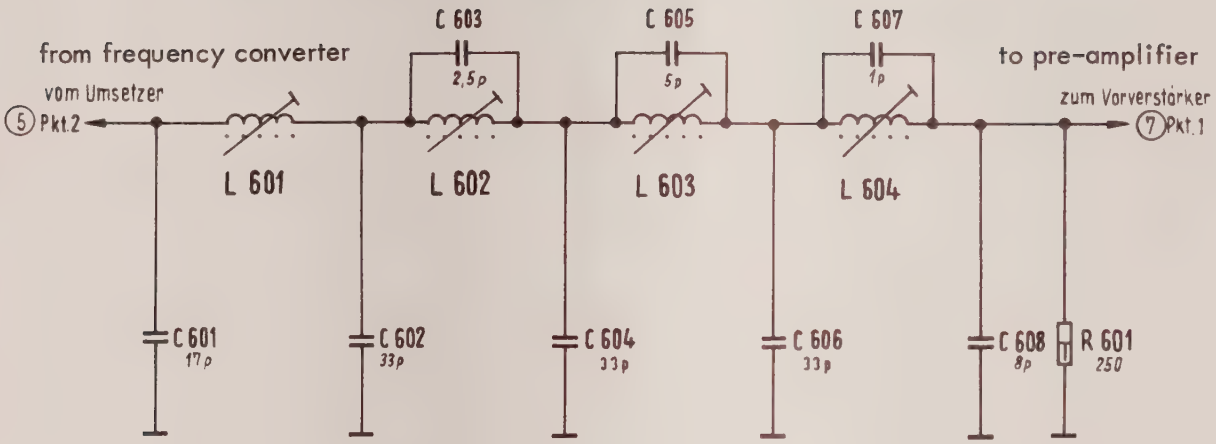
69-MHz-Verstärker (4)

69 MHz Amplifier


R 501
TP1
1
Ü 501
R 502
C 501
R 503
R 505
R 507
242-D
R 506
T 502
T 501
R 509
R 508
Ü 502
R 515
R 517
Gl 504
R 518
R 514
R 516
Gl 503
5
TP 2
R 513
R 511
Gl 502
2
4
R 512
R 510
Gl 501
3



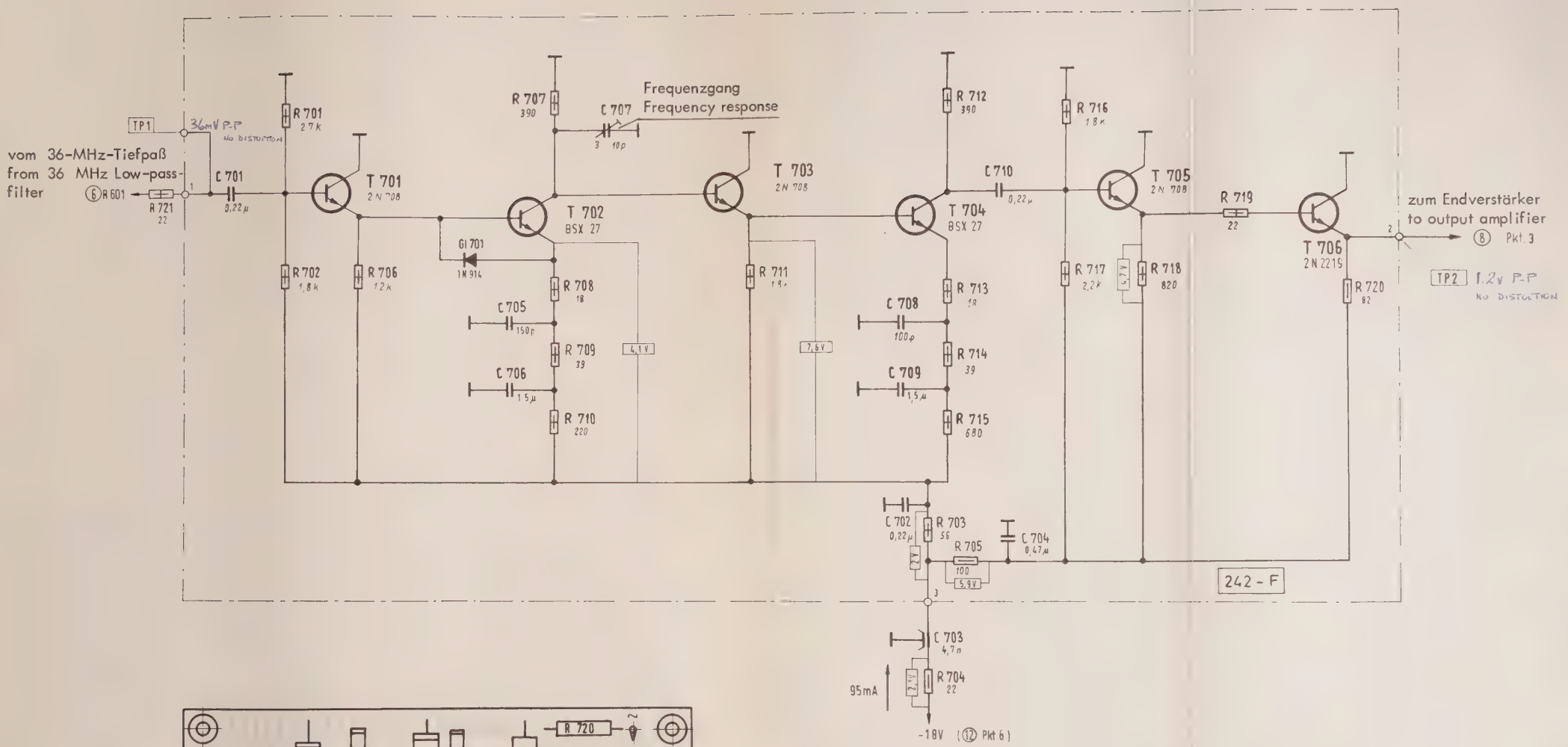
PS-5/BN 242
Umsetzer (5)
(Frequency Converter)

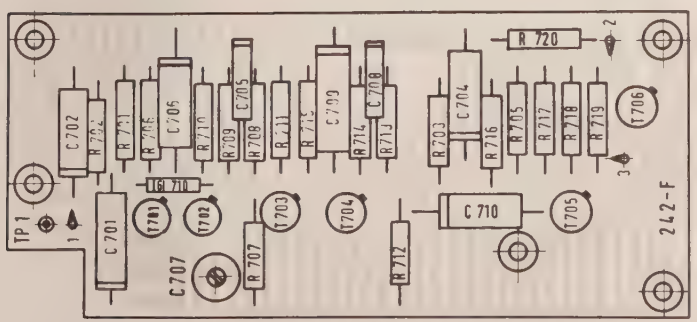


PS-5/BN 242

36-MHz-Tiefpaß (6)

(36 MHz Low Pass Filter)

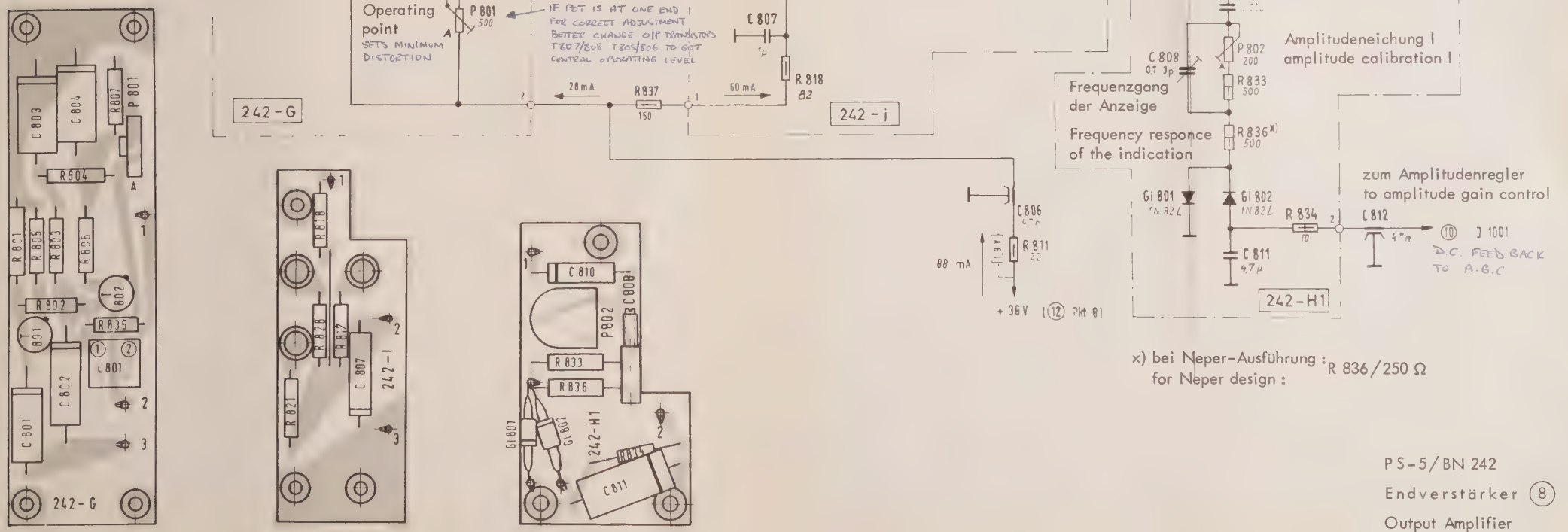




PS-5/BN 242
Vorverstärker (7)
(Pre-Amplifier)

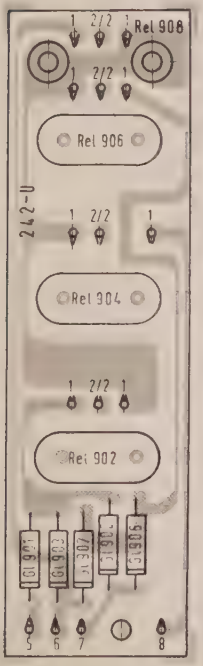
VOLTAGE / WAVEFORMS

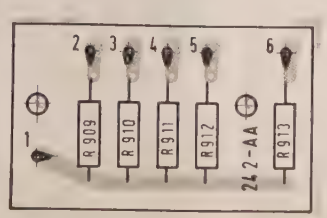
CONDITIONS:-
A.G.C.... ON
METER..... 1V 75Ω VOLTAGE LEVEL
OUTPUT 1... LOADED 75Ω
" 2... " "

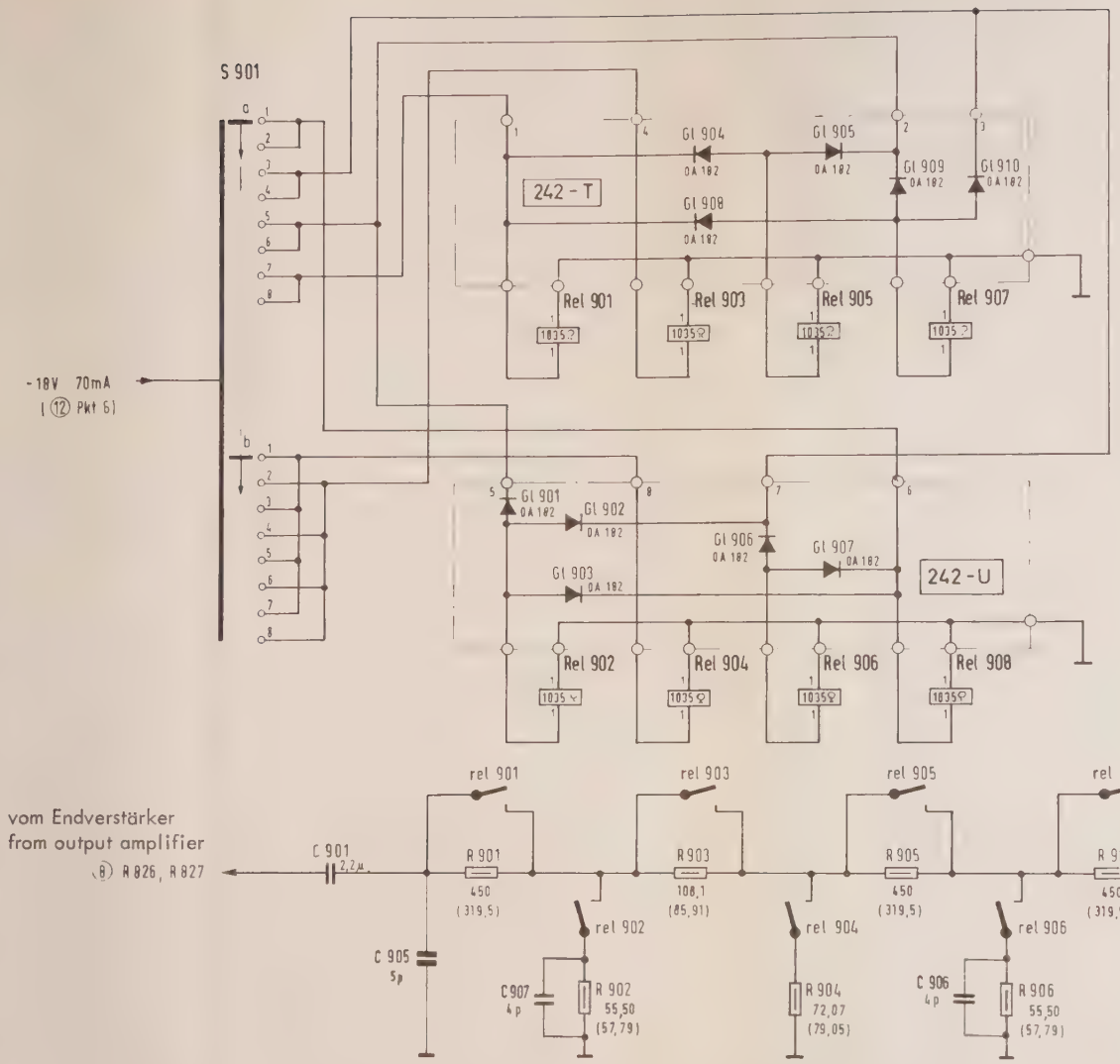


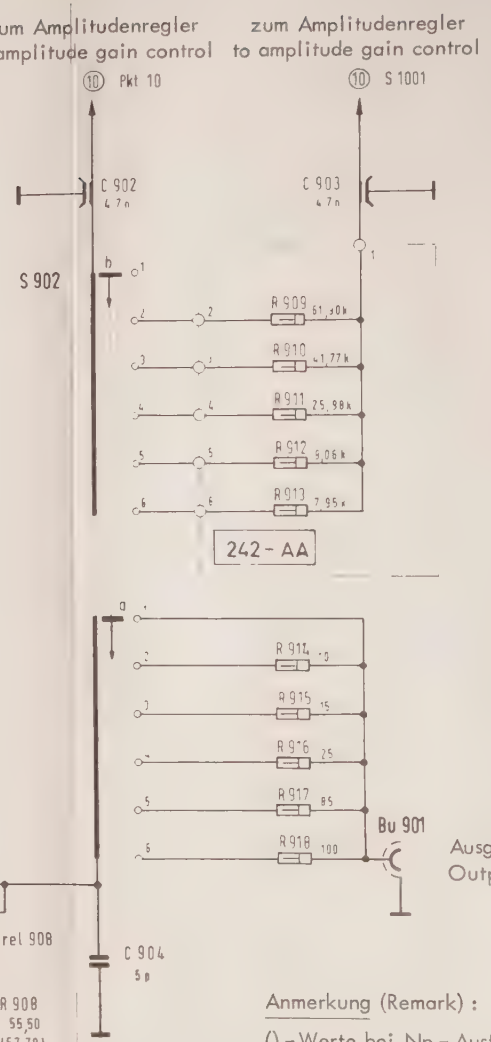
x) bei Neper-Ausführung : R 836 / 250 Ω
for Neper design :

PS-5/BN 242
Endverstärker (8)
Output Amplifier









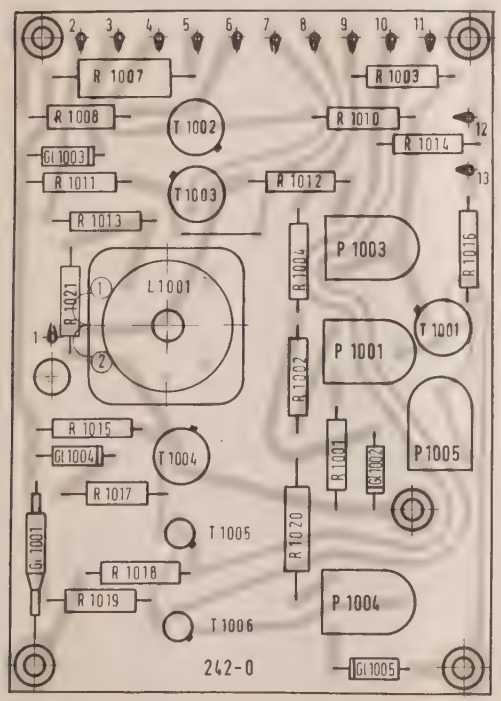
Anmerkung (Remark) :

() - Werte bei Np - Ausführung
() - Values of Np model

PS-5/BN 242, 242/1

Teiler dB, Np ⑨

Attenuator



+36 V

31 mA

R 1006 33

C 1001 47n

R 1007 680

GI 1001 ZM 15

R 1008 600

GI 1003 OA 127

Ausgangs-amplitude

Output level FRONT PANEL

P 1002 500

T 1003 ASY 27

R 1011 820

T 1002 BSY 54

R 1012 680

Arbeitspunkt Amplitudenregler

Operating point amplitude gain-control

P 1003 1k

R 1010 500

vom Amplitudenmodulator

from amplitude modulator

③ C 301

R 1021 10K

R 1013 10

L 1001

S 1002

R 1015 820

T 1004 ASY 27

GI 1004 OA 127

R 1017 500

R 1019 47K

T 1005 2 N 930 BFX 93

AM - Modulation Bu 100

INSERTING JACK IN HERE OPENS CLOSED LOOP (S1002) & ENABLES EASIER FAULT-FINDING.

vom Teiler (from divider)

⑨ C 902

Amplitudeneichung II

Amplitude calibration II

(R 909 bis (to) R 913)

P 1005 500

R 1014 x) 61,30k

R 1016 6,06k

R 1018 700

J 1001

vom Teiler (from divider)

⑨ C 903

S 1001

S 1001 :
1 = Leistungspegel (Power level)
2 = Spannungspegel (Voltage level)

vom Endverstärker

from output amplifier ⑧ C 812

T 1006 2 N 930 / BFX 93

C 1003 4,7n

Skalenteilungs-fehler (Vorstrom)

Scale division error(bias current)

GI 1005 AAZ 13

P 1004 100

R 1020 15

T 1001 BSY 54

4 V Einstellung

4 V Setting

P 1001 1k

R 1001 1k

R 1002 1k

GI 1002 ZP 6,8 1)

R 1003 820

R 1004 470

-4 V

242 - 0

C 1002 47n

R 1005 33

RANGE ADJUSTMENT FOR P1002

36 mA

-18 V (⑫ Pkt 6)

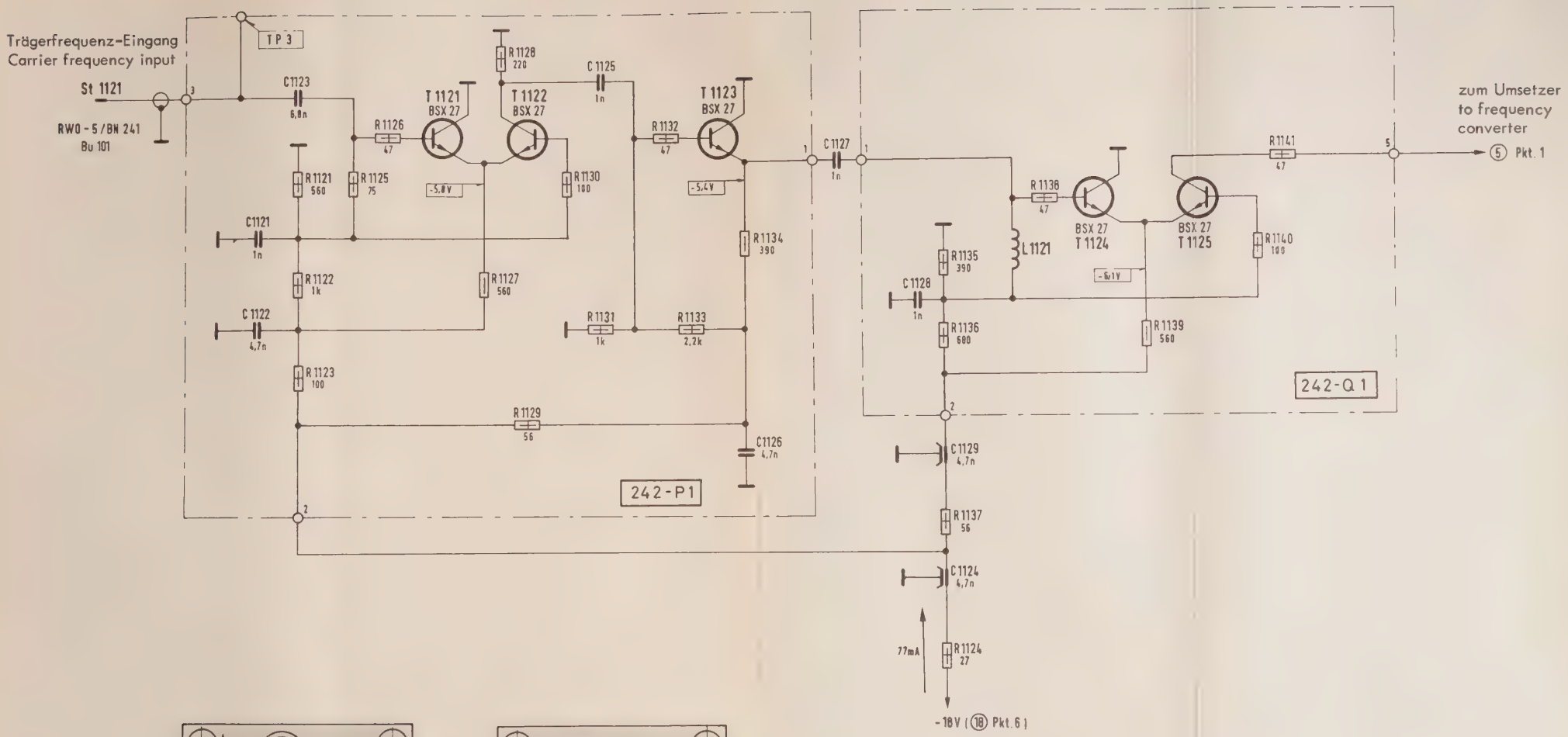
x) Bei Neper-Ausführung for Neper design 21,27 k

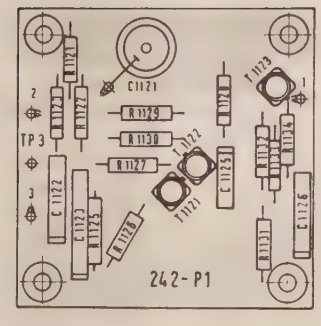
1) Serie (Series) I,K : GI 1002/ZG 6,8

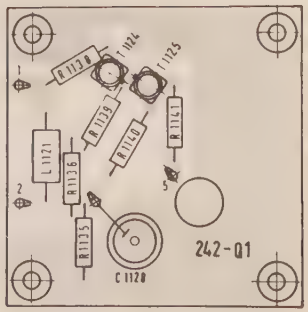
PS-5/BN 242

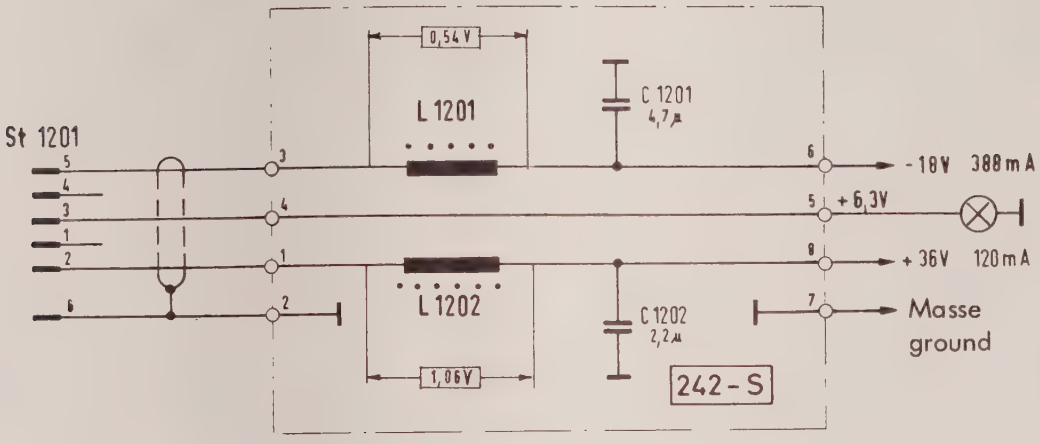
Amplitudenregler ⑩

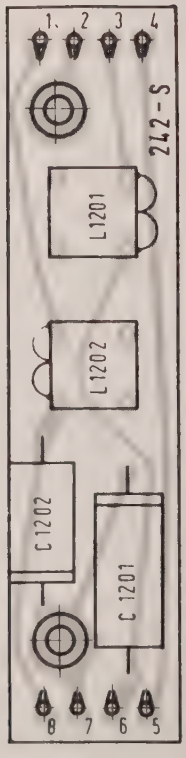
Amplitude Control


Trägerfrequenz-Eingang
Carrier frequency input
St 1121
RWO - 5 / BN 241
Bu 101
TP 3
C1123
6,8n
R1126
47
T 1121
BSX 27
R1128
220
T 1122
BSX 27
C 1125
1n
T 1123
BSX 27
R1132
47
C1127
1n
R1121
560
R1125
75
-5,8V
R1130
100
C1121
1n
R1122
1k
R1127
560
C 1122
4,7n
R1123
100
R1131
1k
R1133
2,2k
R1134
390
R1129
56
C1126
4,7n
242-P1
R1141
47
zum Umsetzer
to frequency
converter
⑤ Pkt. 1
R1138
47
BSX 27
T 1124
BSX 27
T 1125
L1121
R1140
100
-5,4V
R1135
390
C1128
1n
R1136
680
R1139
560
242-Q1
C1129
4,7n
R1137
56
C1124
4,7n
77mA
R1124
27
-18V (⑱ Pkt. 6)


242-P1


242-Q1



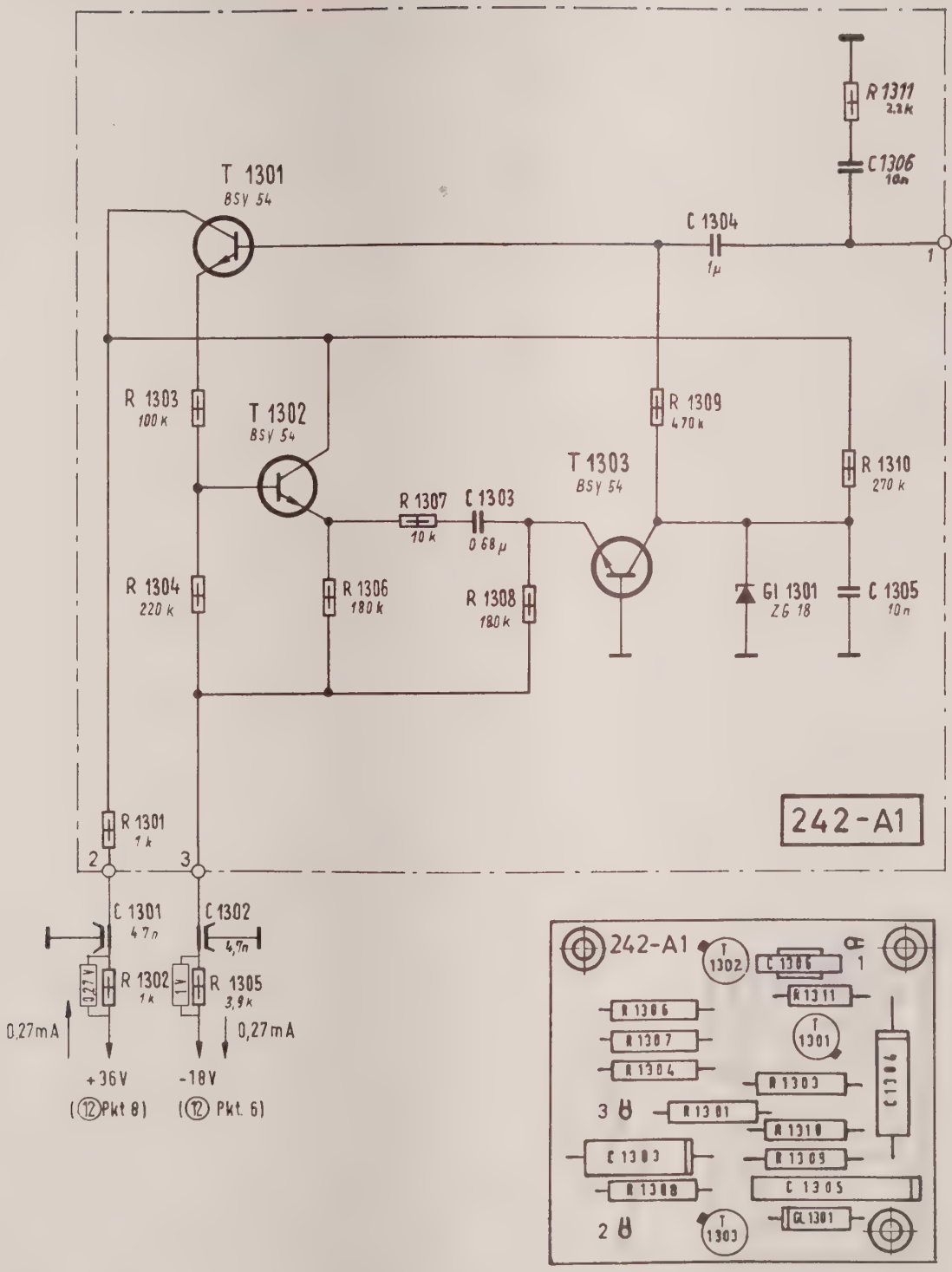


PS-5/BN 242

Spannungs-Verdrosselung (12)

Voltage Filter Network

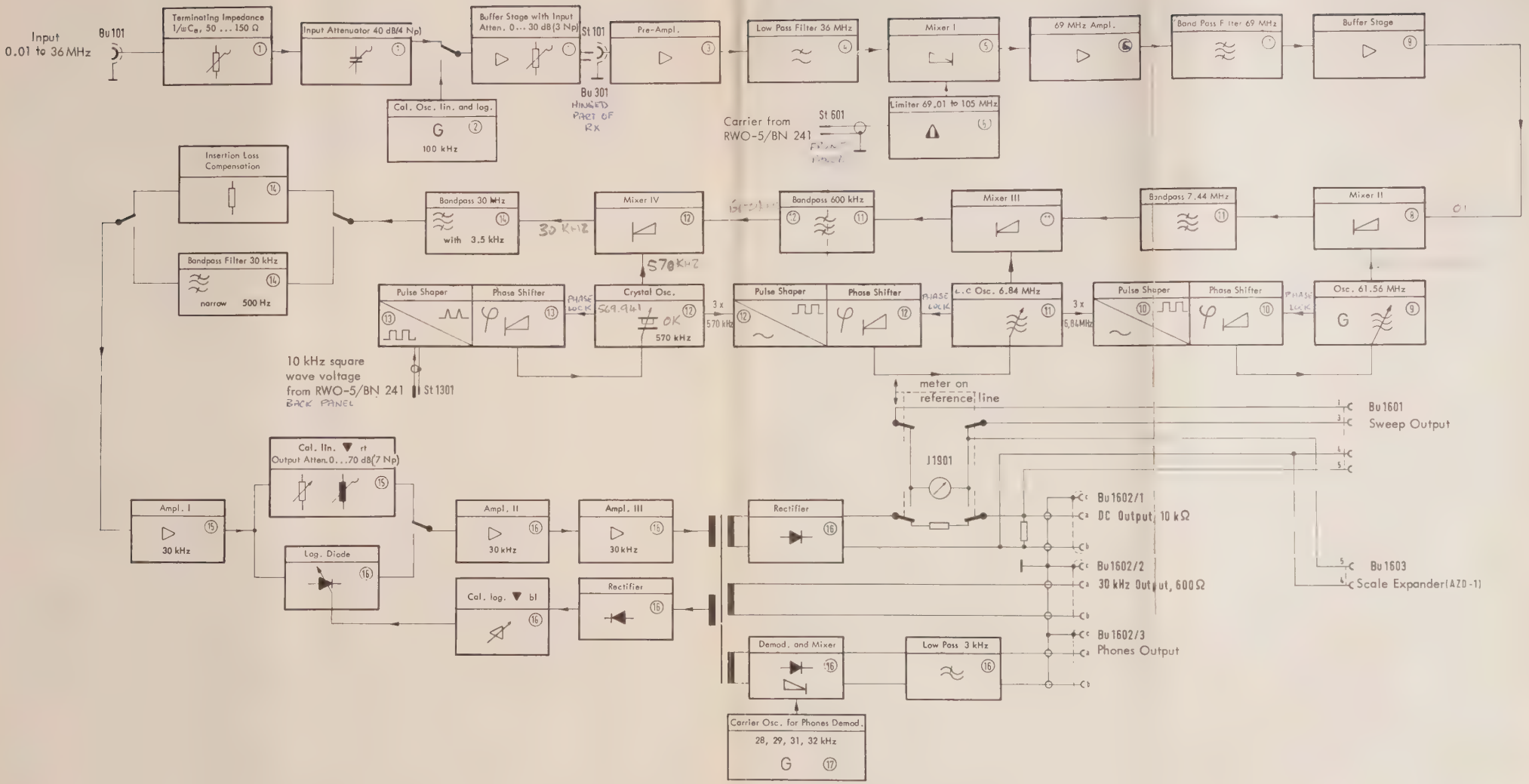
ALIGNMENT PROCEEDURE AVAILABLE FROM W & G.



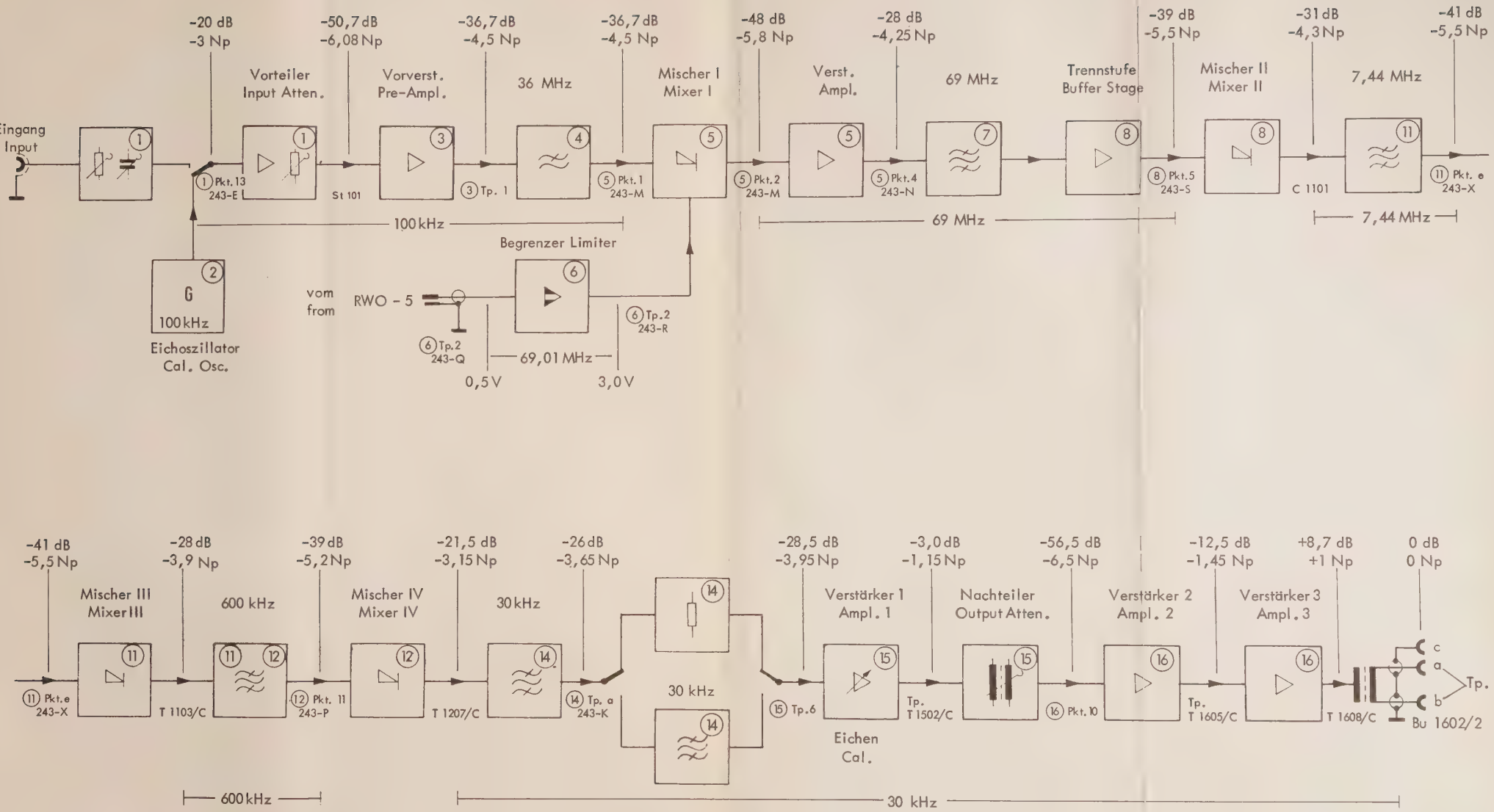
Stromaufnahme bei nicht schwingendem Oszillator (Phasenregler gerastet)

Current consumption with quiescent oscillator (phase shifting network locked)

PS-5/BN 242
Such-Oszillator (13)
(Hunting Oscillator)



PM-5 / BN 243 / BN 243/1
Block Circuit Diagram



Erläuterung (Beispiel):

(14) = Stromlaufplan 14
243-M = Leiterplatte M
Pkt. 6 = Anschlußpunkt 6
Tp. a = Testpunkt a
T 1207/C Kollektor von T 1207

Note e.g.:

= circuit diagram 14
= circuit board M
= connect. point 6
= test point a
= collector of T 1207

Angegebene Pegel in Stellung "Eichen lin" gegen Masse gemessen

Indicated levels apply to instrument in position "CAL. LIN." and measured with respect to ground.

Bild (Fig.) 46 PM-5 / BN 243 und BN 243/1
Pegelplan dB, Np
(Signal Level Diagram)

Relaisplan (Relay Diagram)		Nummern der erregten Relais (Operating Relay No.)													eingeschaltete Dämpfung (insertion loss)					
dB- und Np-Gerät (dB and Np version)		Vorteiler (input attenuator)								Nachteiler (output attenuator)				log.	Vorteiler (input atten.)		Nachteiler (output atten.)		gesamt (total)	
Tastensatz S 1801 (push-button-set)	S 1803	rt	gn	gn	rt	rt	rt	gn	rt					1605 1606						
	dB Np	107	108	109	110	111	112	113	114	1509	1510	1511	1512		dB	Np	dB	Np	dB	Np
Messen lin. (measure lin.)	-110 -12	x o	x o	x o		x o		x o		x o	x o	x o	x o		- -	- -	- -	- -	- -	- -
	-100 -11	x o	x o	x o		x		x o	o	x o	x o	o	x o		- 10	- 1	10 -	1 -	10	1
obere Zeile: x "rauscharm"	-90 -10	x o	x o	x o	o	x		x o		o	o	x o	x o		- 20	- 2	20 -	2 -	20	2
	-80 -9	x o	x o	x o		x		x		o	o	o	x o		- 30	- 3	30 -	3 -	30	3
untere Zeile: o "klirrarm"	-70 -8	x	x	x		x o		x o		x o	x o	x o	o		- 40	- 4	40 -	4 -	40	4
	-60 -7	x	x	x		x		x o	o	x o	x o	o	o		- 50	- 5	50 -	5 -	50	5
(upper line: x "low noise")	-50 -6	x	x	x	o	x		x o		o	o	x o	o		- 60	- 6	60 -	6 -	60	6
	-40 -5	x	x	x				x	x	o	o	x o	o		10 70	1 7	60 -	6 -	70	7
(lower line: o "low distortion")	-30 -4	x	x	x	x			x		o	o	x	o		20 70	2 7	60 10	6 1	80	8
	-20 -3	x	x	x								x o	o		30 70	3 7	60 20	6 2	90	9
	-10 -2					x		x					o		40 70	4 7	60 30	6 3	100	10
	0 -1							x	x	o	o	x o			50 70	5 7	60 40	6 4	110	11
	+10 0				x			x		o	o	x			60 70	6 7	60 50	6 5	120	12
	+20 +1											x o			70 70	7 7	60 60	6 6	130	13
	- +2															7 7		7 7		14
Messen log. (measure log.)	- +2				x			x		x				x		6				
	+20 +1							x	x	x				x	50	5				
Kein Unterschied zwischen "rauscharm" und "klirrarm" (no difference between "low noise" and "low distortion")	+10 0					x		x		x				x	40	4				
	0 -1	x	x	x						x				x	30	3				
	-10 -2	x	x	x	x			x		x				x	20	2				
	-20 -3	x	x	x		x		x	x	x				x	10	1				
	-30 -4	x	x	x		x		x		x				x	-	-				
Eich.(cal.) lin.				x			x					x			30	3	60	6	90	9
Eich.(cal.) log.				x			x			x				x	30	3				

Bandbreite und Demodulationsart
(Bandwidth and mode of demodulation)

Schalter- bzw. Tastenstellung (switch or push-button-position)		Relaisnummer (relay No.)				
		Umsetzoszillator (carrier oscillator)				
S 1701	S 1801/6	1704	1705	1706	1405, 1406	
	3,5 kHz 500 Hz	x	x		x	
	2,5 kHz 500 Hz			x	x	
	3,5 kHz 500 Hz				x	

Bei Umschaltung auf Leistungspegel kommt Relais 1513 hinzu.

(Relay 1513 is also included in the power level mode).

x bzw. o = Relais erregt

x resp. o = relay operative

Die Arbeitsweise der Stabrelais ist durch Farbpunkte gekennzeichnet.
Es bedeutet :

rot (rt) = Arbeitskontakt

grün (gn) = Ruhekontakt

(The relay contacts are colour coded as follows :

red (rt) = normally open

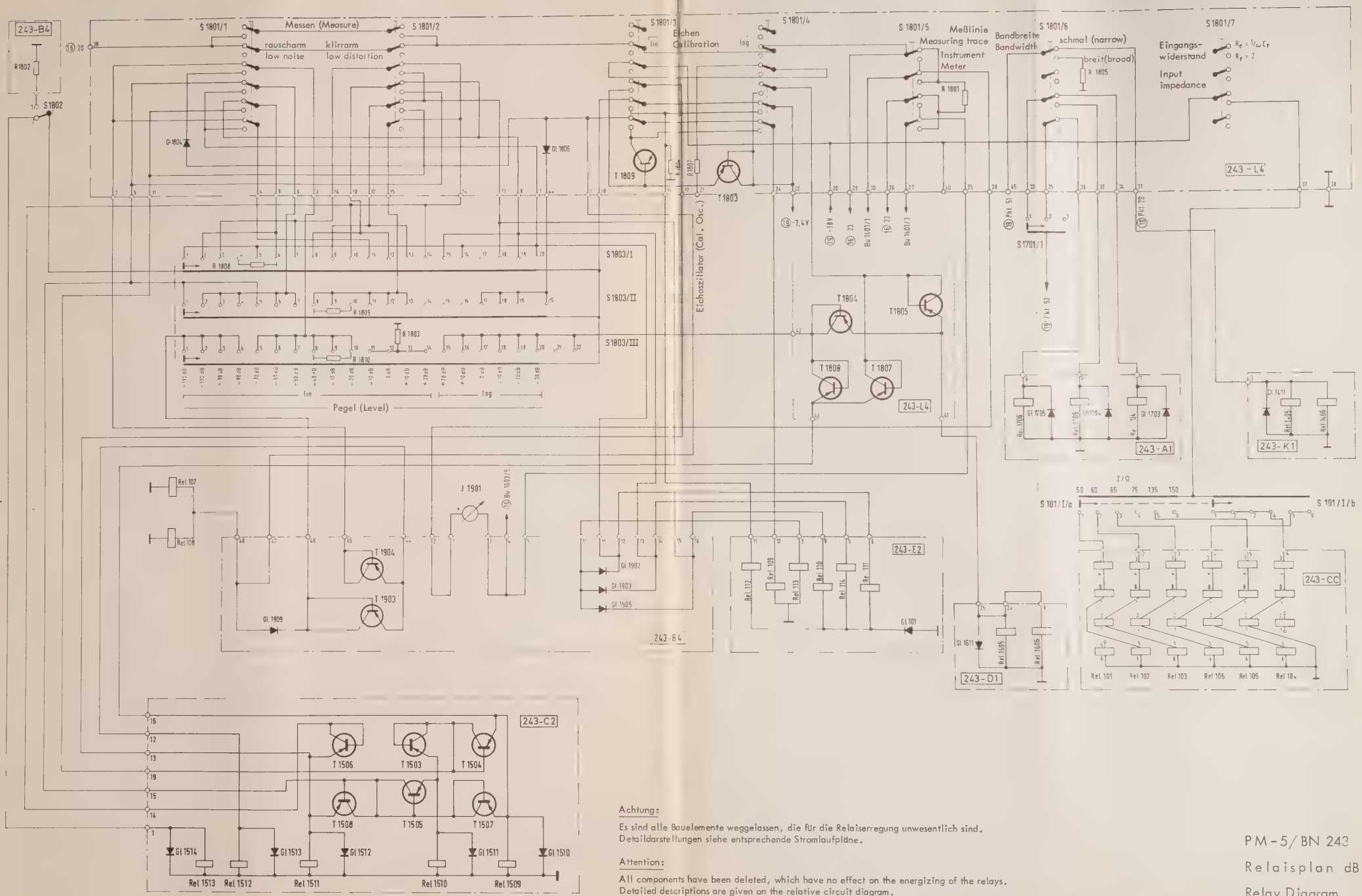
green (gn) = normally closed)

Reed-Kontakte im Abschlußwiderstand
(reed switch for terminating impedance)

S 101	Widerstand und Relaisnummer (resistance and relay No.)					
Z/Ω	150 Ω 101	300 Ω 102	487,5 Ω 103	75 Ω 104	1350 Ω 105	150 Ω 106
50	x			x		
60		x		x		
65			x	x		
75				x		
135					x	x
150						x

PM-5/BN 243, 243/1

Relaisplan (Relay Diagram)



Achtung:

Es sind alle Bauelemente weggelassen, die für die Relaiserregung unwesentlich sind.
Detaildarstellungen siehe entsprechende Stromlaufpläne.

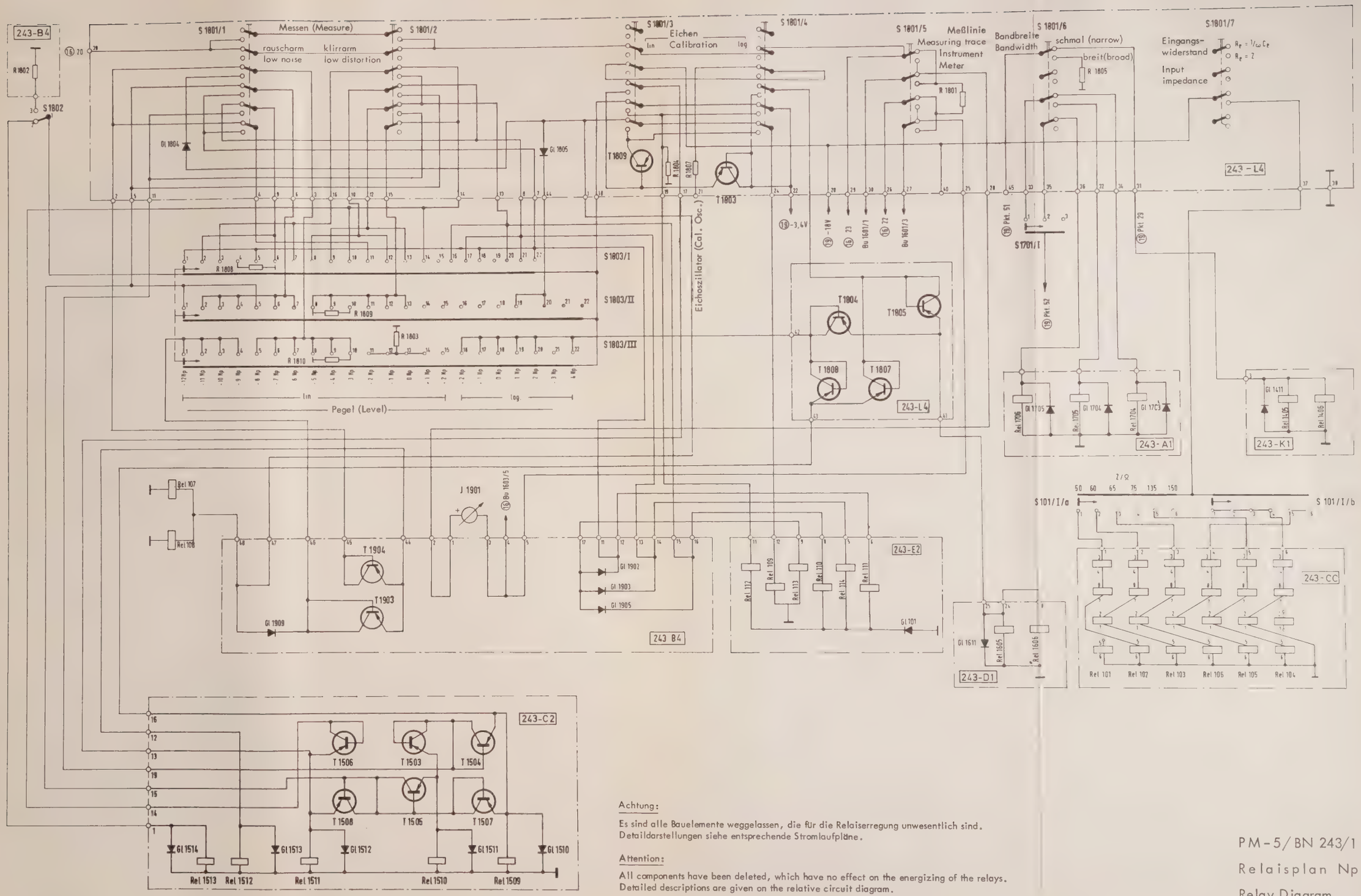
Attention:

All components have been deleted, which have no effect on the energizing of the relays.
Detailed descriptions are given on the relative circuit diagram.

PM-5/BN 243

Relaisplan dB

Relay Diagram



Achtung:

Es sind alle Bauelemente weggelassen, die für die Relaiserregung unwesentlich sind.
Detaildarstellungen siehe entsprechende Stromlaufpläne.

Attention:

All components have been deleted, which have no effect on the energizing of the relays.
Detailed descriptions are given on the relative circuit diagram.

PM-5/BN 243/1

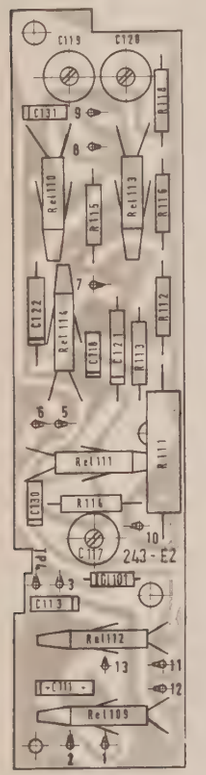
Relaisplan Np

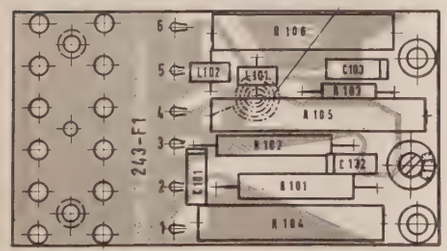
Relay Diagram

Drahtfarben für
wire colours for

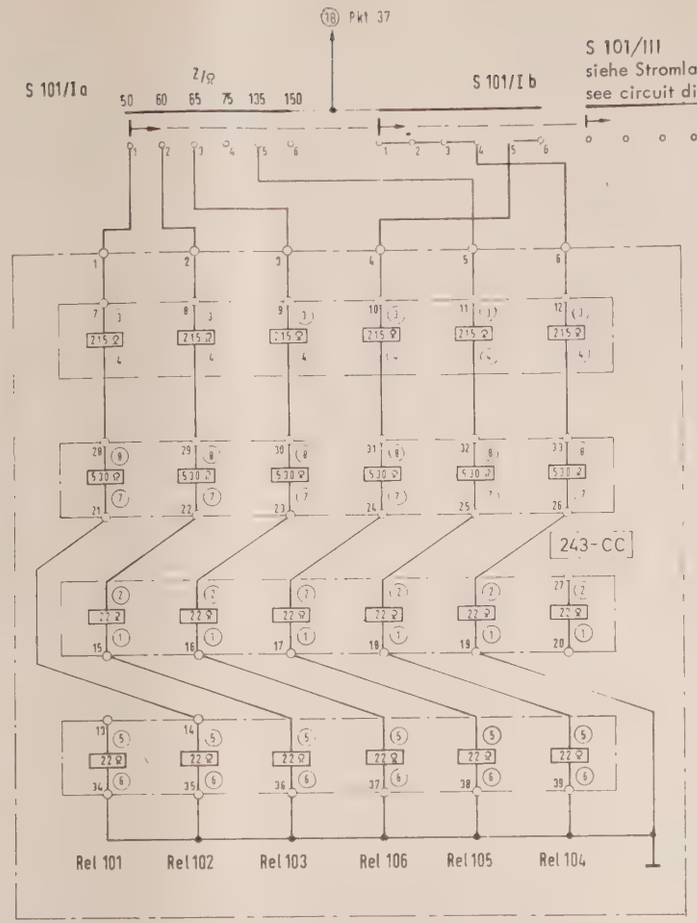
243-E 2

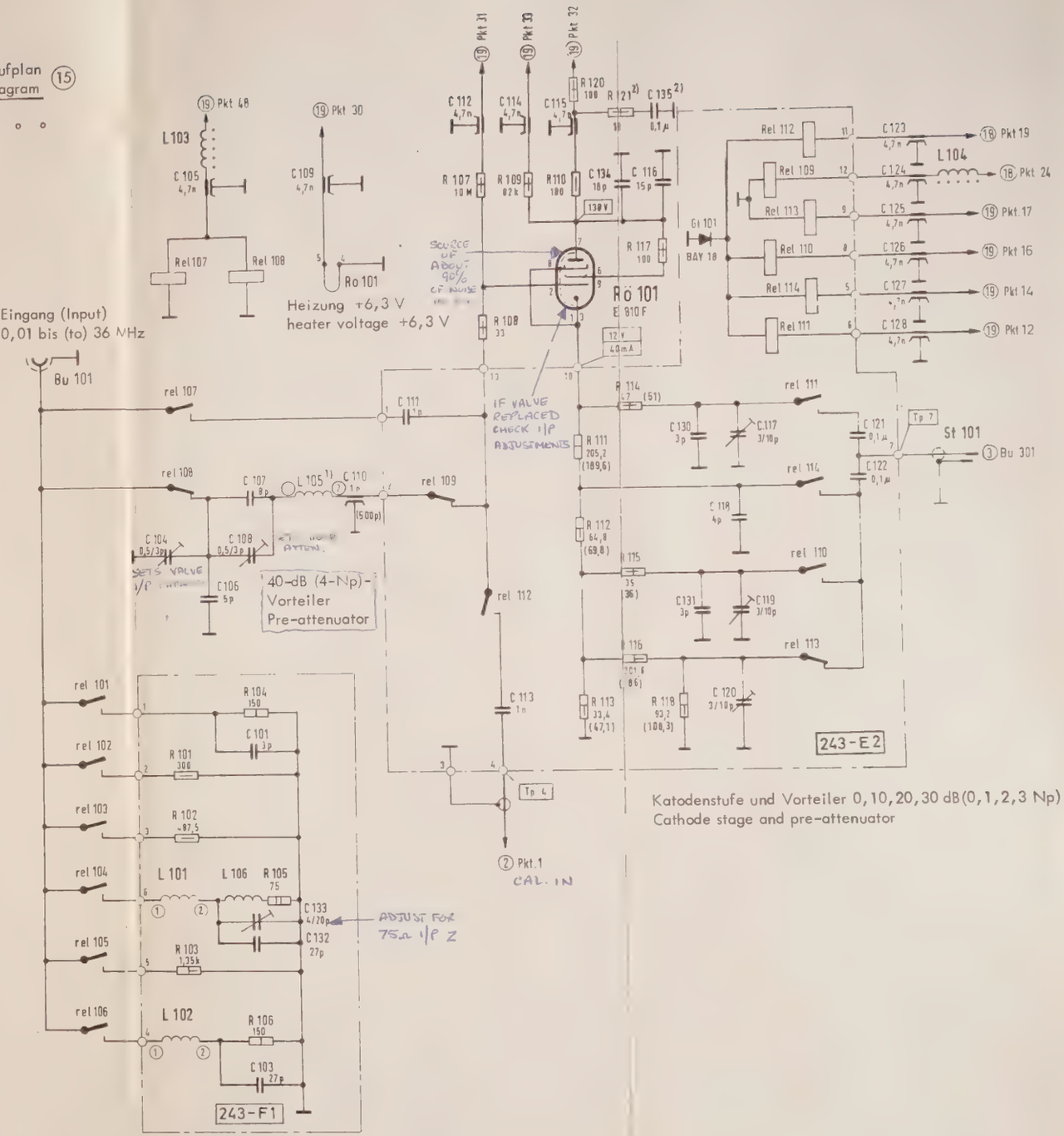
3 Schirm
4 sw
5 grgn
6 grbl
8 grgn
9 gr
11 grrt
12 gr





L 106 gedruckt (printed)





Anmerkungen (Remarks):

()-Werte bei Np-Ausführung
()-Values of Np model

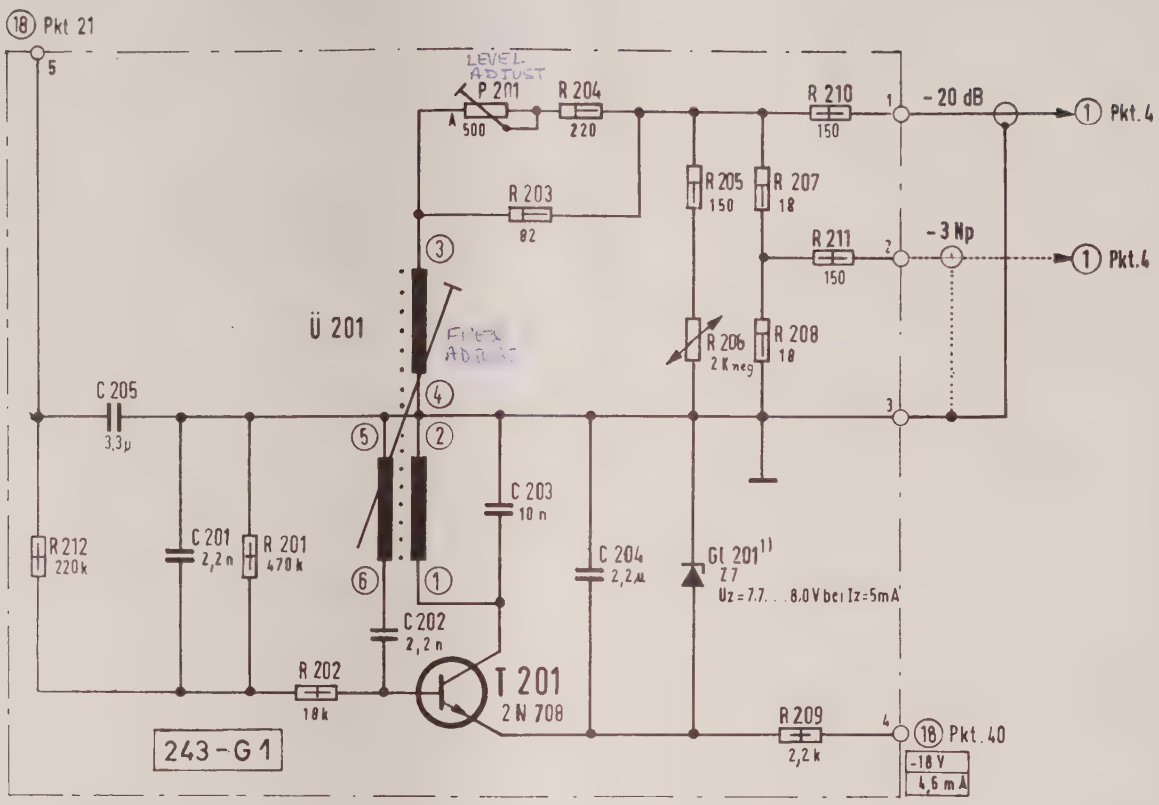
1) entfällt bei Np-Ausführung
deleted in Np model

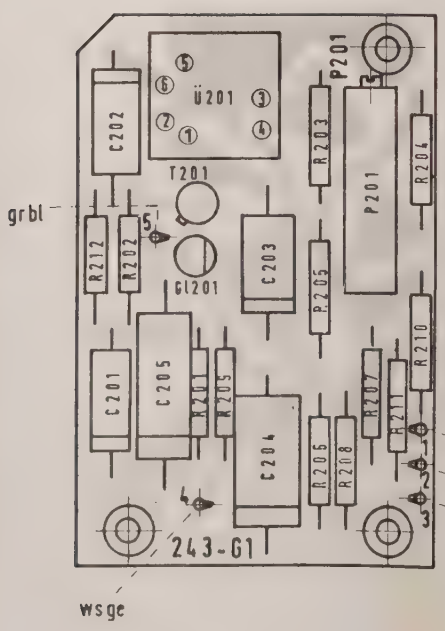
2) Serie (Series) K: R 121; C 135 entfallen (deleted).

PM-5 BN 243, 243/1

Eingangsteil (1) dB, Np

Input Unit





dB	Neper
sw	frei (vacant)
frei	sw
Schirm	Schirm

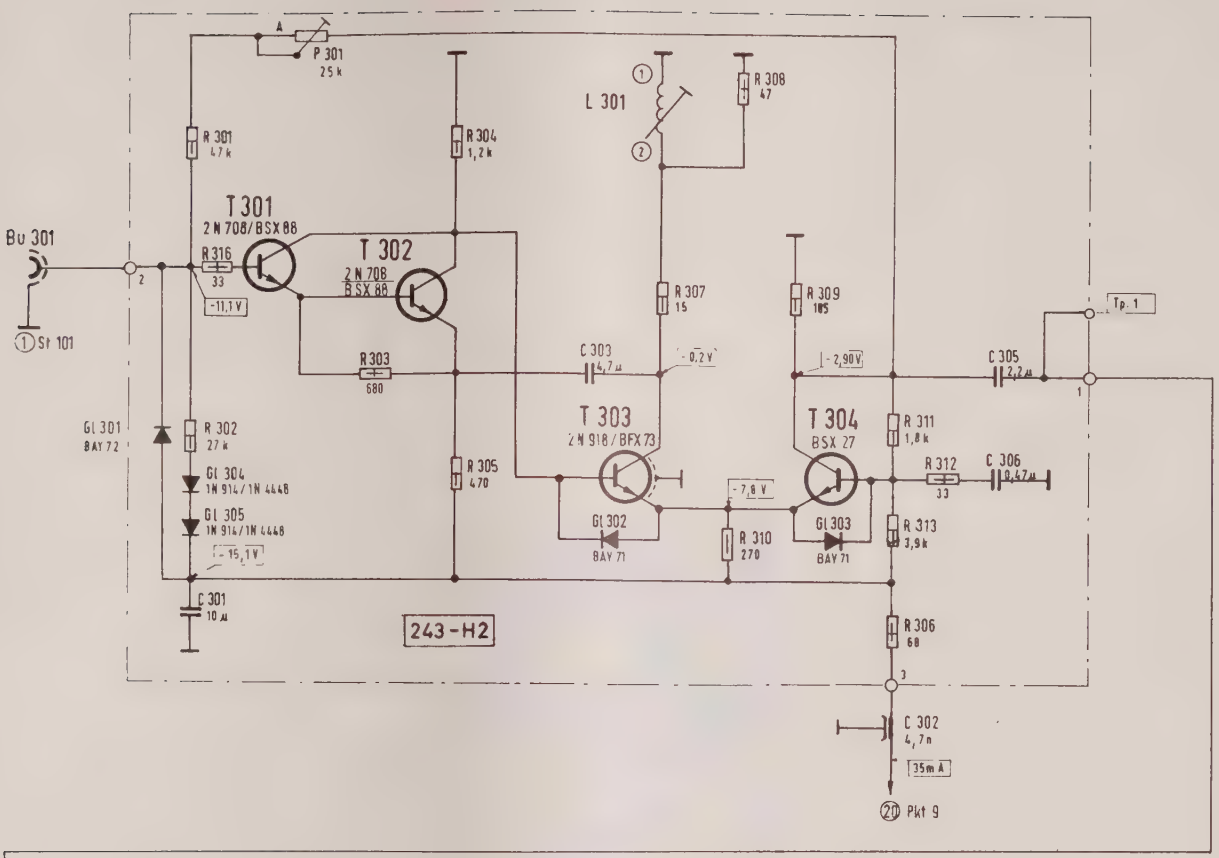
Serienänderungen (Series mods) :

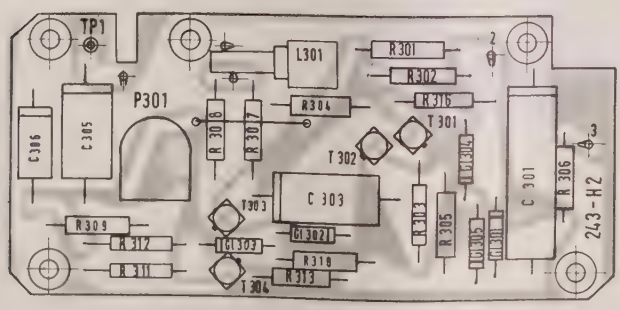
1) Serie (Series) F : Gl 201/Z8

PM-5/BN 243 und 243/1

Eichoszillator 100 kHz dB, Np (2)

(Cal. Oscillator)

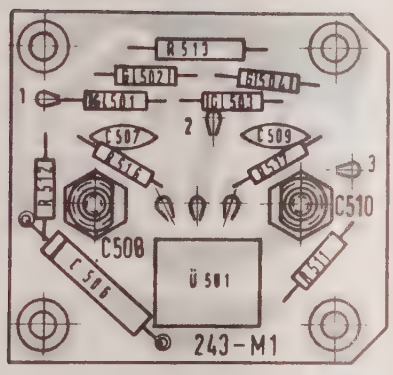


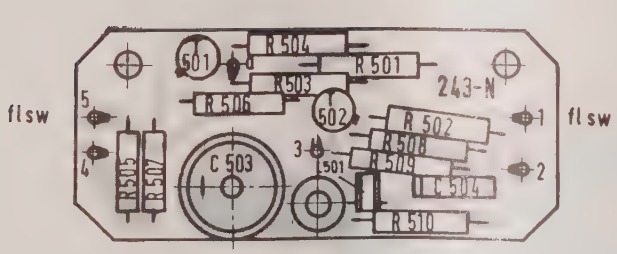


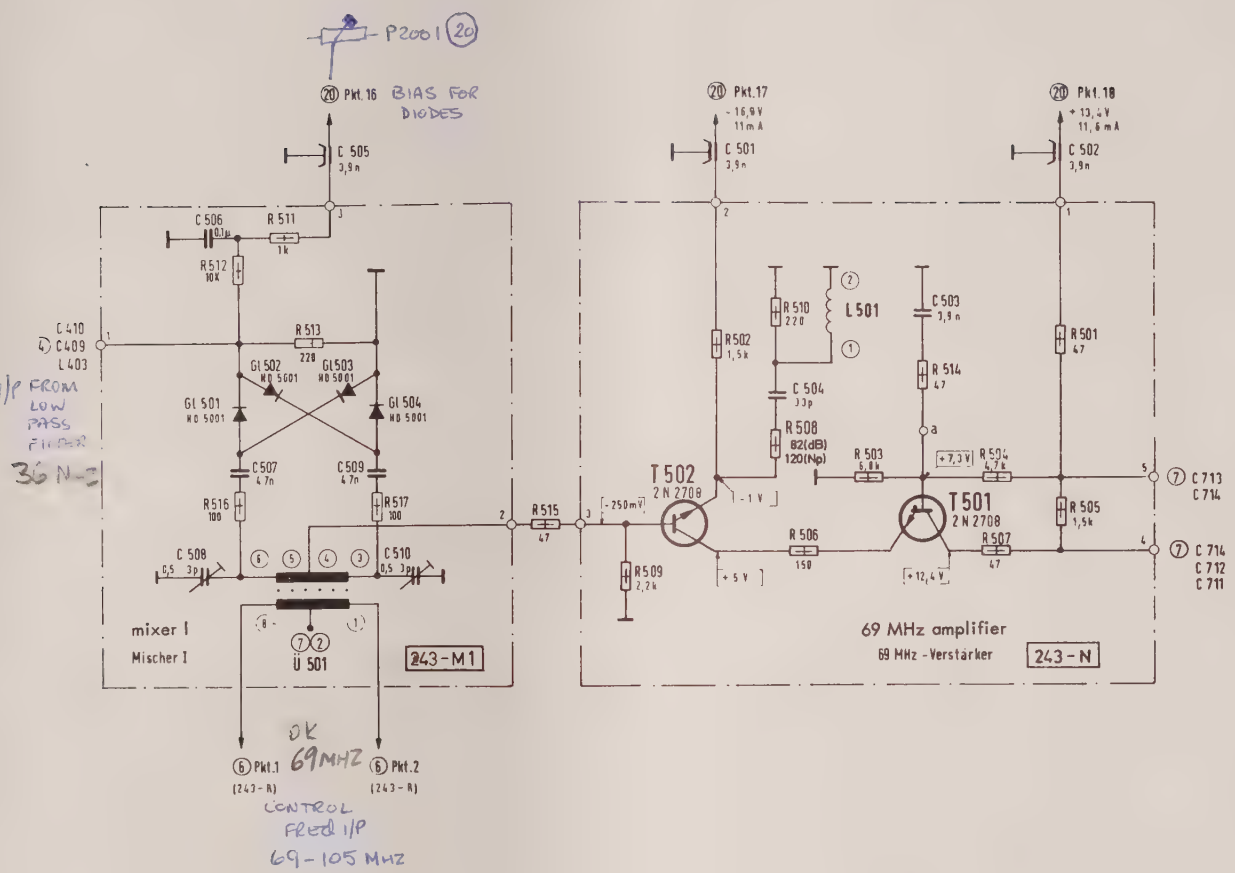
PM-5 BN 243 (3) (4)

Vorverstärker (Pre-Amplifier) 10 kHz bis (to) 36 MHz

36-MHz-Tiefpaß (36 MHz Low Pass Filter)


R 513
C 507
C 509
R 512
C508
C510
C 506
Ü 501
R 511
243-M1


flsw
R 504
501
R 501
243-N
R503
R 506
502
R 502
R 508
R 509
C 503
C 504
R505
R 507
R 510
flsw

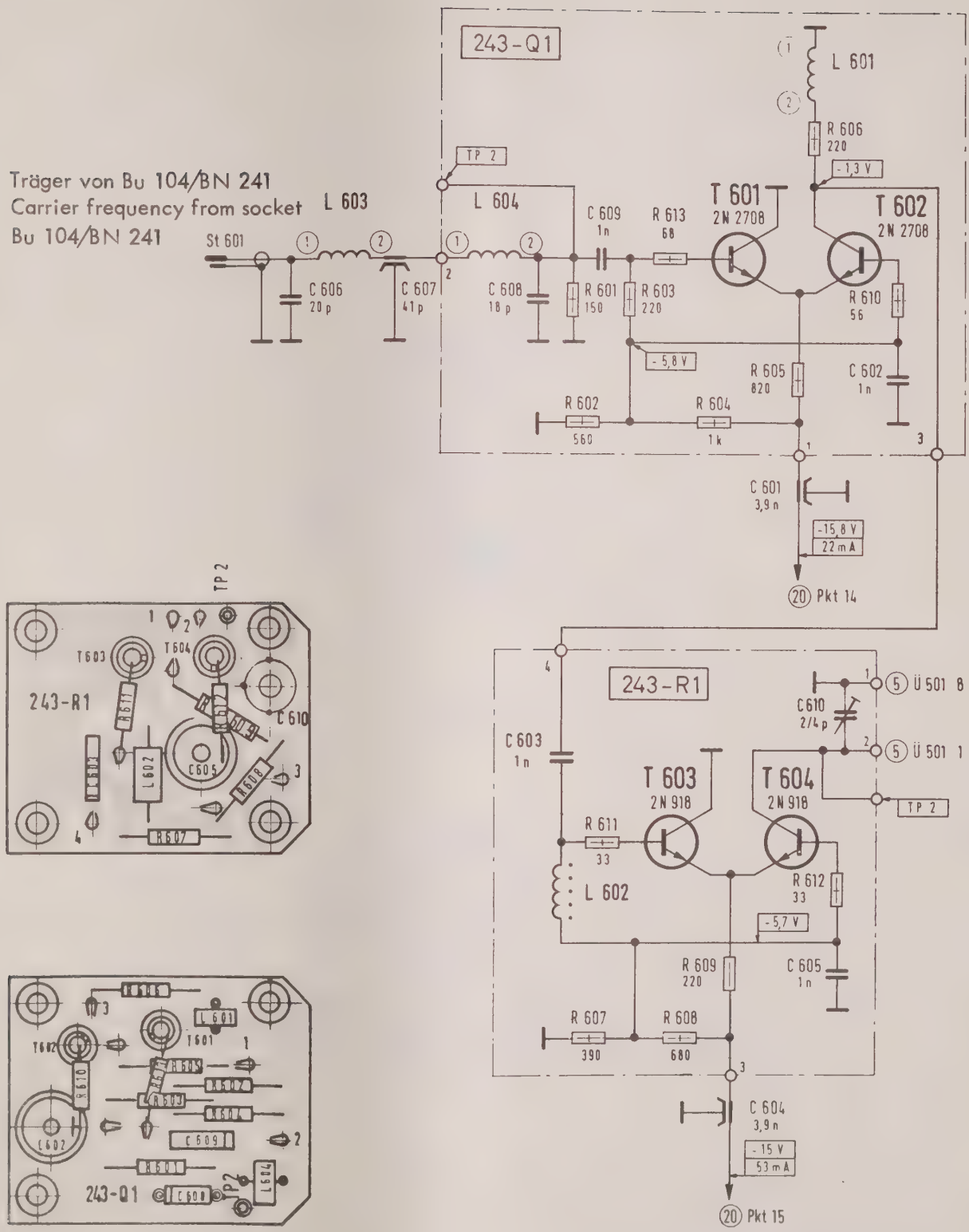


PM-5/BN 243 und 243/1

Mischer I und 69-MHz-Verstärker dB, Np (5)

(Mixer I and 69 MHz-Amplifier)

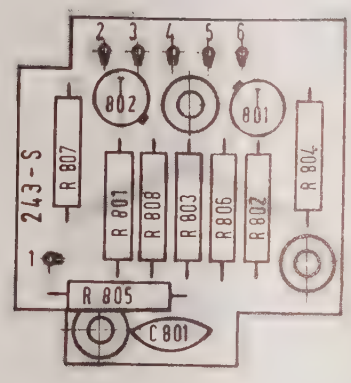
Träger von Bu 104/BN 241
Carrier frequency from socket Bu 104/BN 241

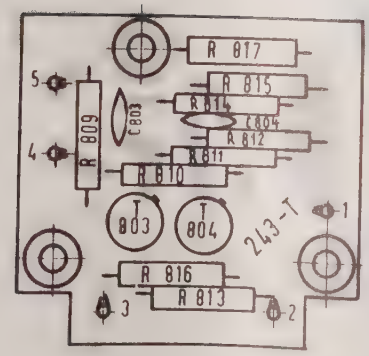


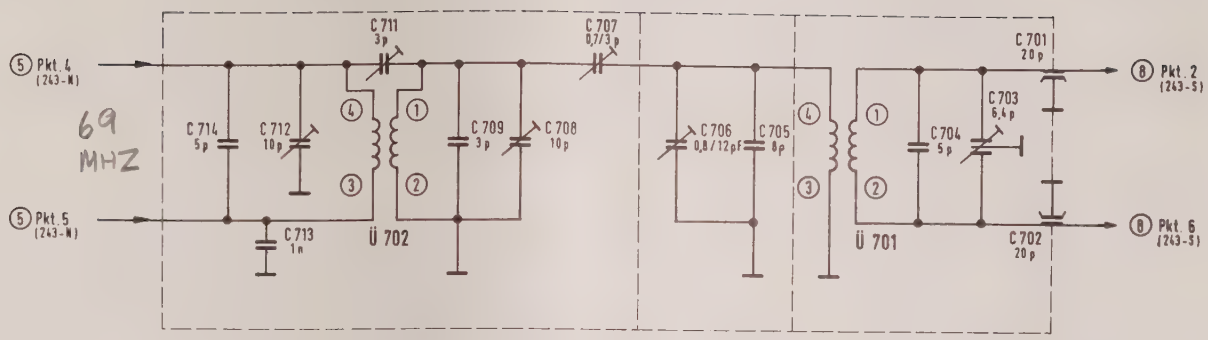
PM-5/BN 243

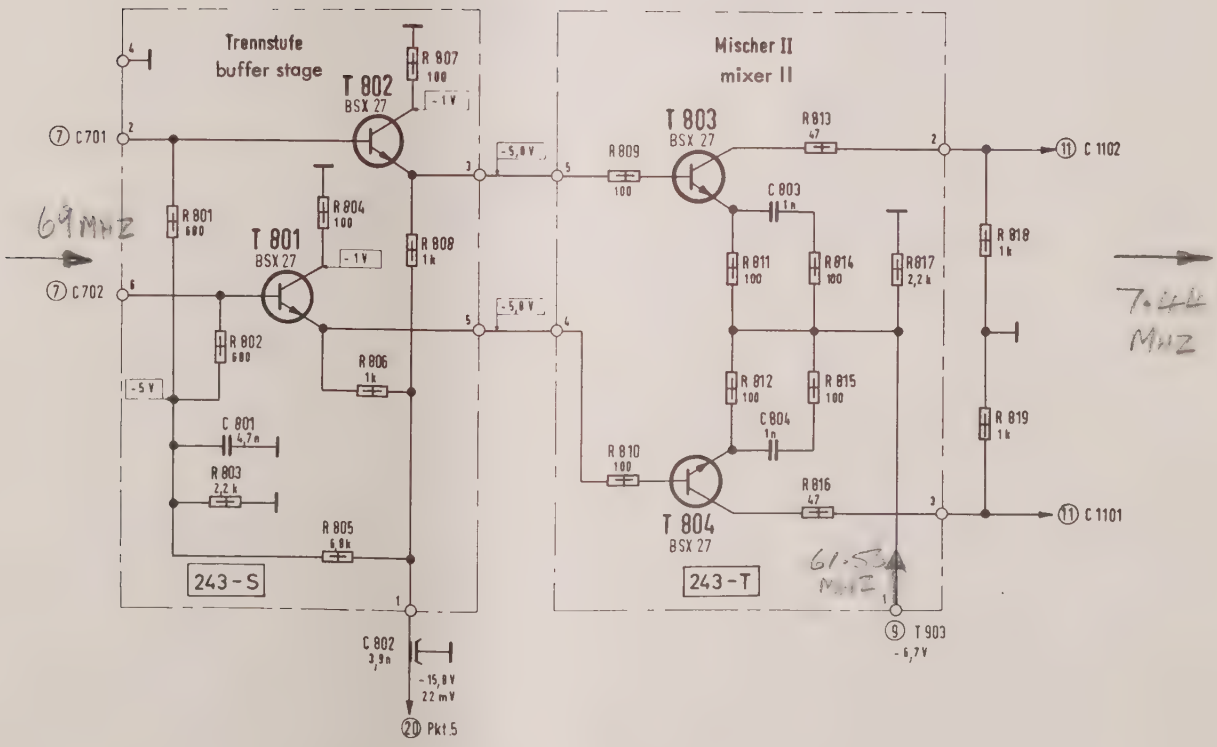
Begrenzer 69,01 bis (to) 105 MHz (6)

(Amplitude Limiter)


2
3
4
5
6
802
801
243-S
R 807
R 804
R 801
R 808
R 803
R 806
R 802
1
R 805
C 801


R 817
5
R 815
R 814
C 803
C 804
R 809
R 812
4
R 811
R 810
803
804
243-T
1
R 816
R 813
3
2





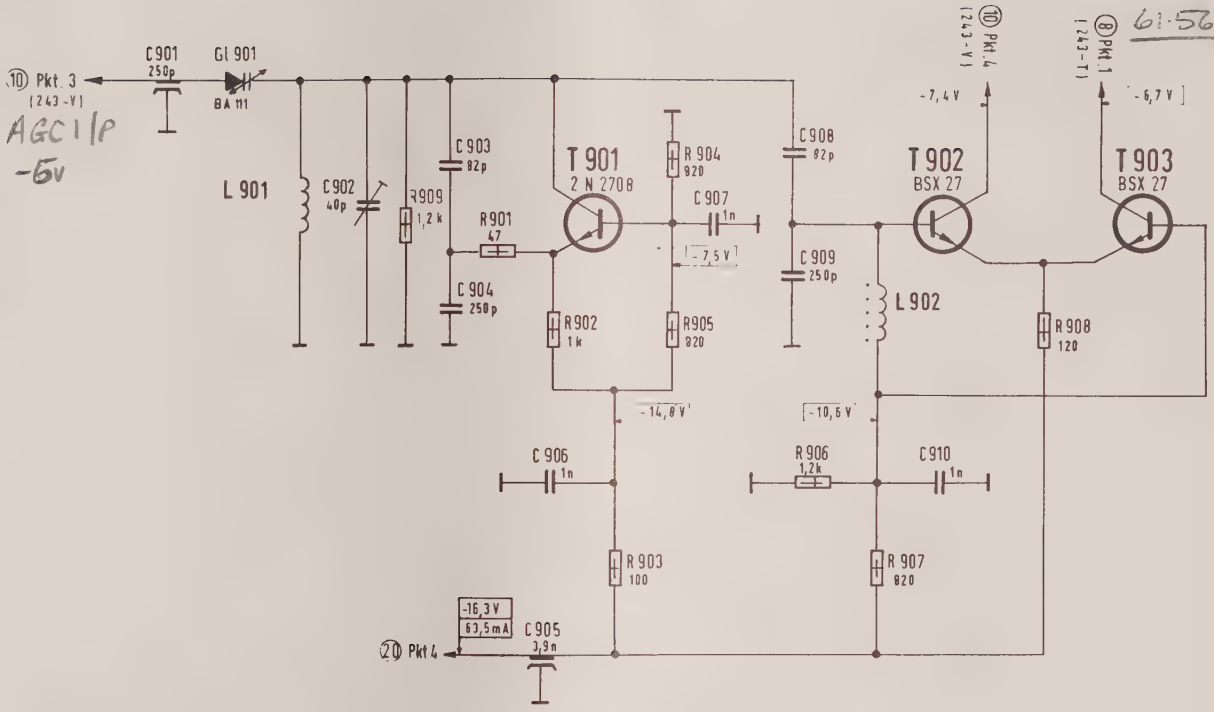
PM-5/BN 243

Bandpaß 69 MHz (7)

(Band Pass Filter)

Mischer II (8)

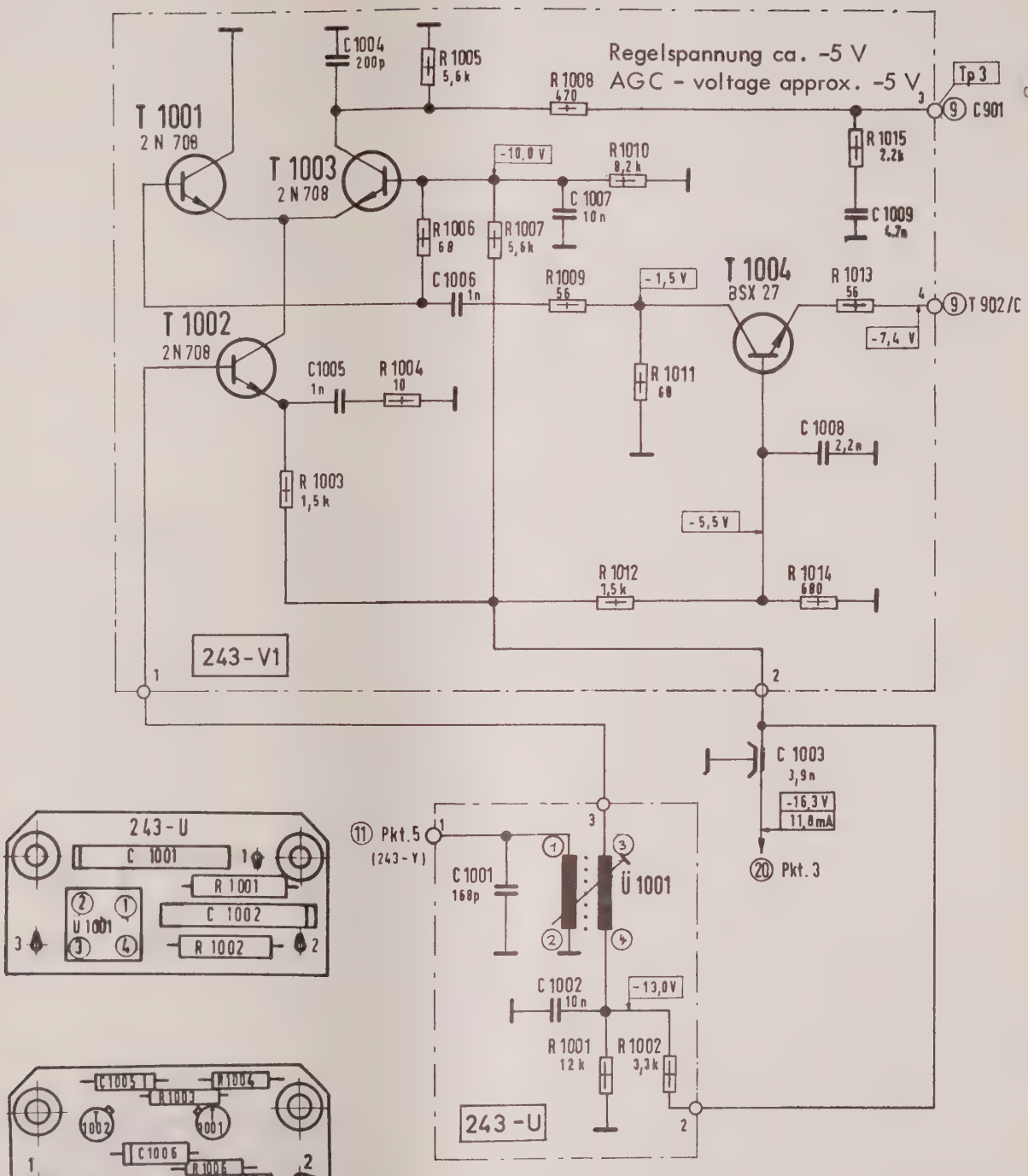
(Mixer II)



PM-5/BN 243

Oszillator und Begrenzer 61,56 MHz (9)

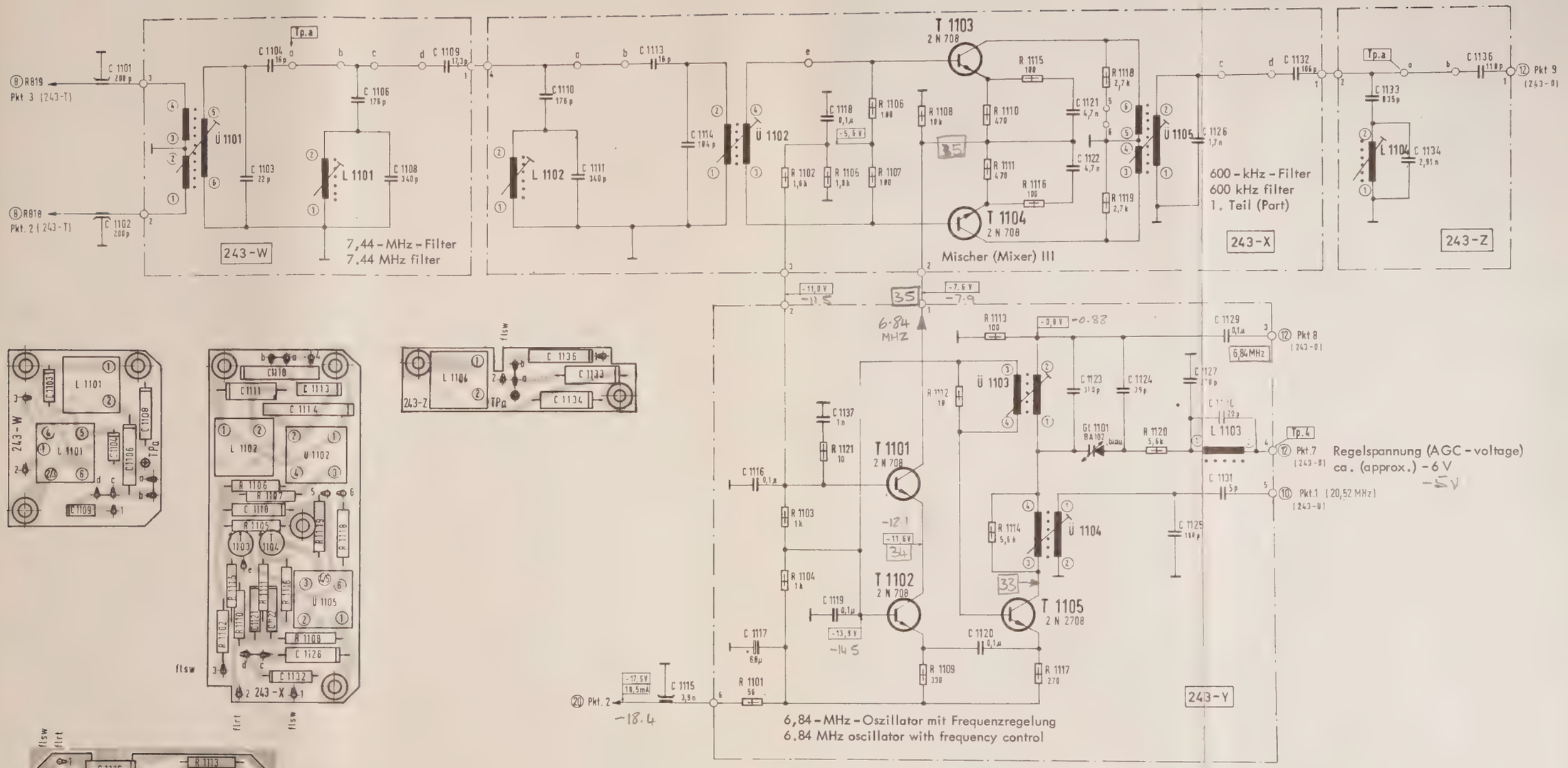
(Oscillator and Limiter)



PM-5/BN 243

Rasteinrichtung 20,52 / 61,56 MHz (10)

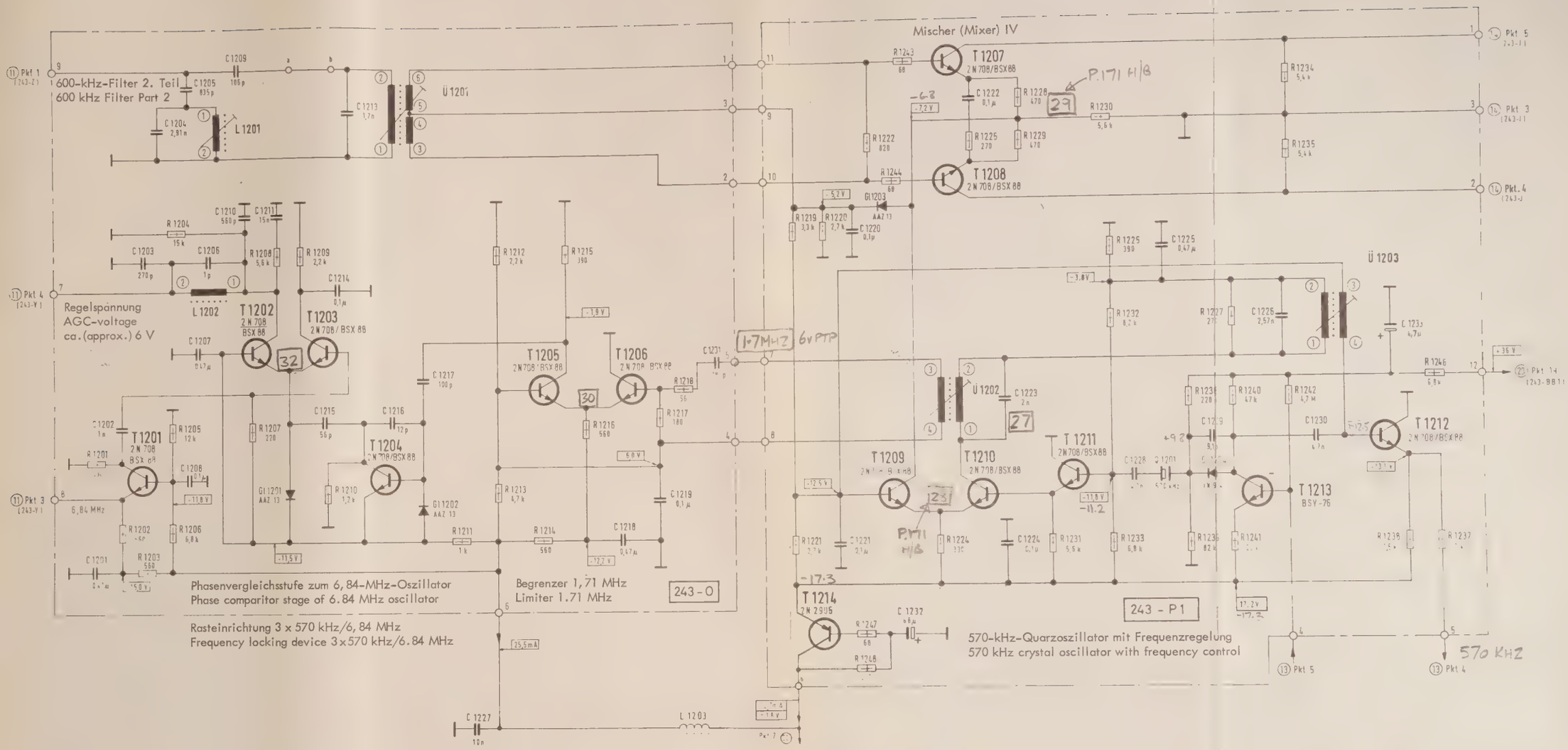
(Synchronizing Unit)

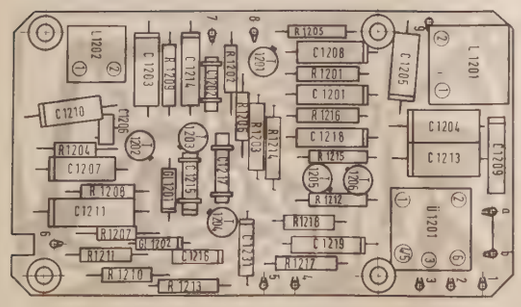


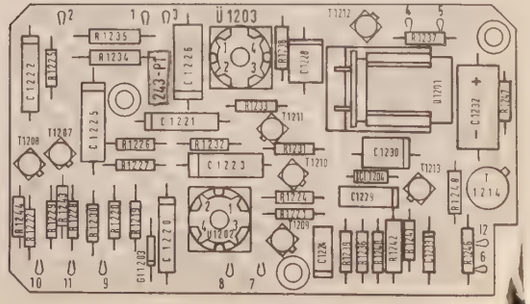
PM-5/BN 243

Umsetzer 7,44 MHz/600 kHz (11)

Frequency Converter





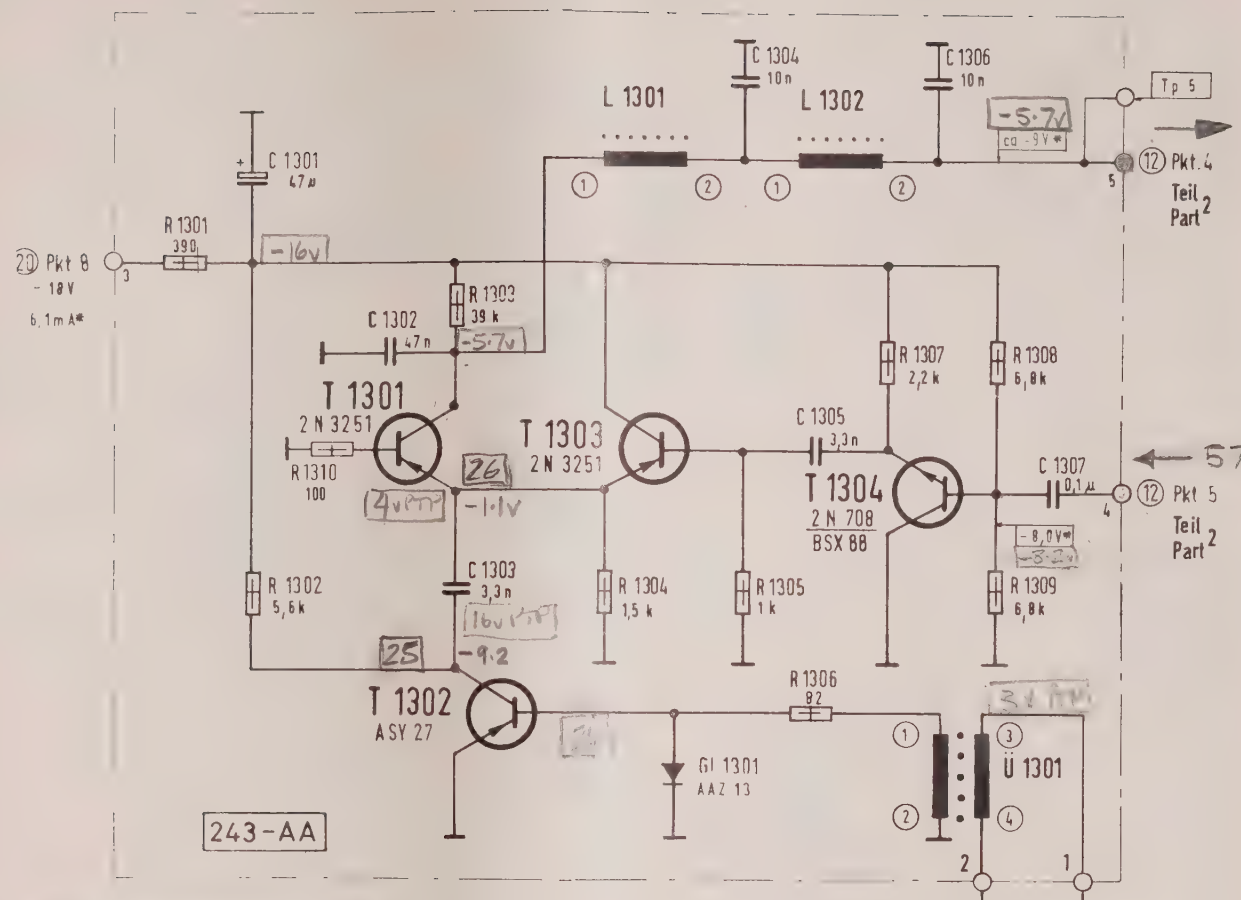


PM-5 BN 243 (12)

Umsetzung 600 kHz/30 kHz

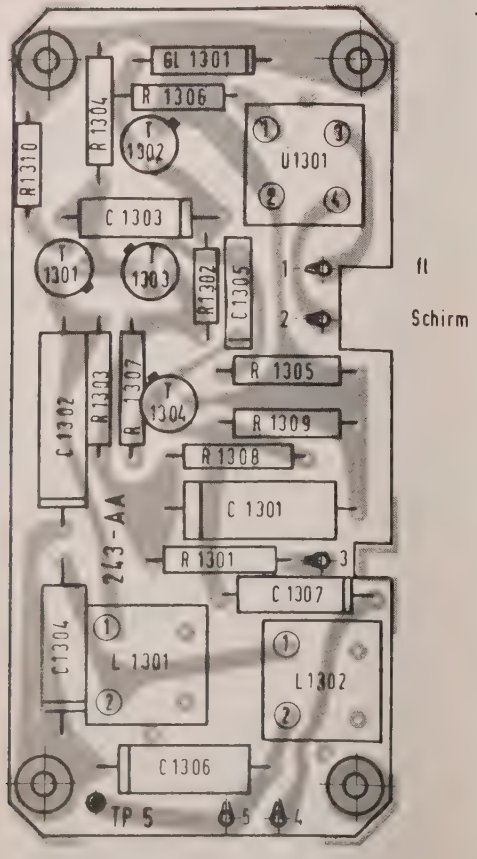
Frequency Converter

ab Serie (from series) N



* Angaben mit 10-kHz-Rechteck

Details given when modulated with 10 kHz square wave voltage

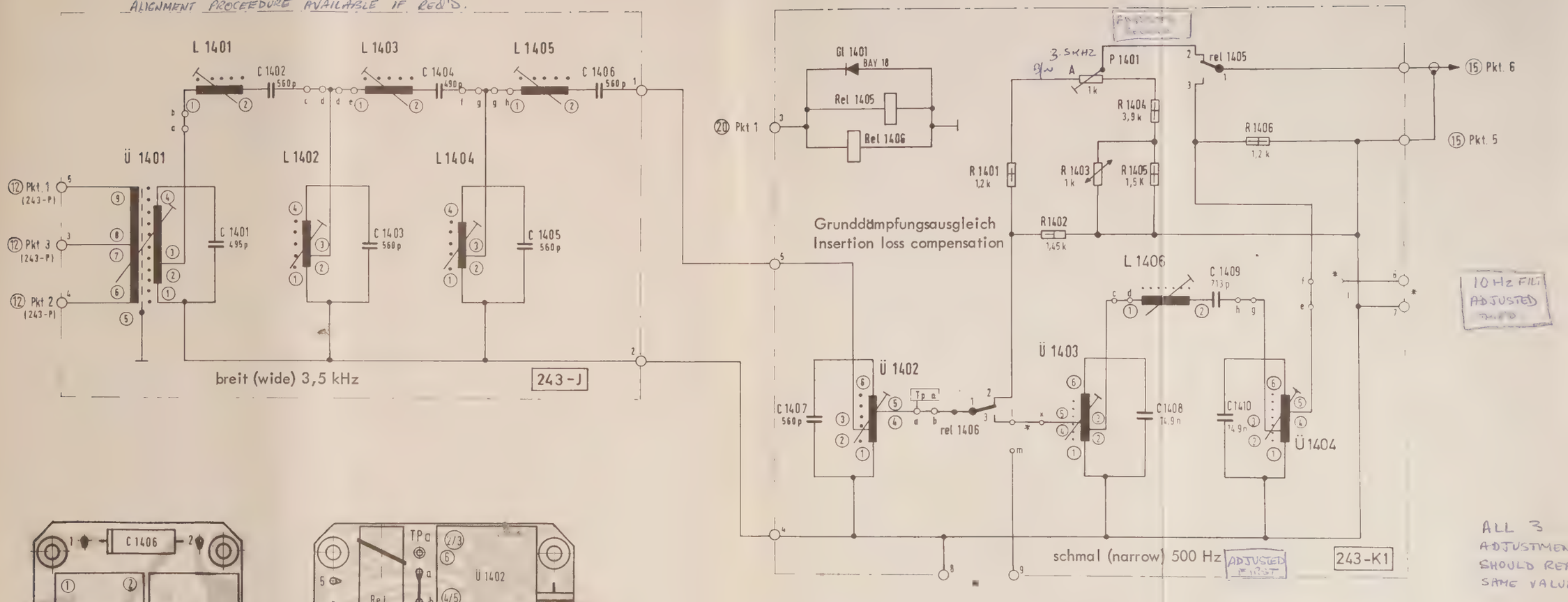


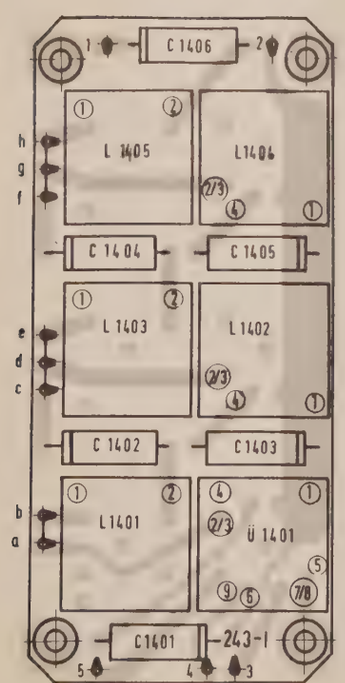
PM-5 BN 243

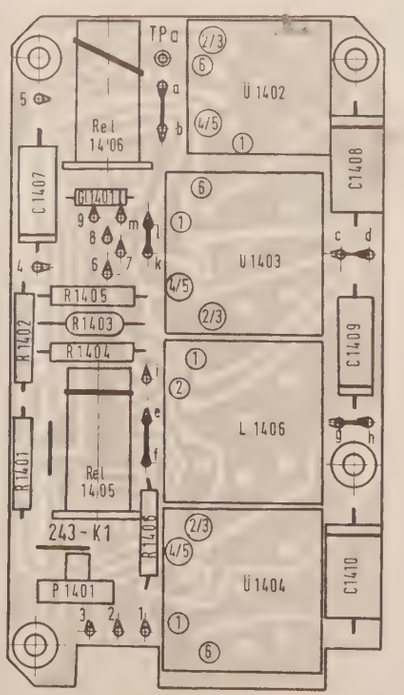
Rasteinrichtung 10/570 kHz (13)

Synchronizing Unit

ALIGNMENT PROCEEDURE AVAILABLE IF REQ'D.







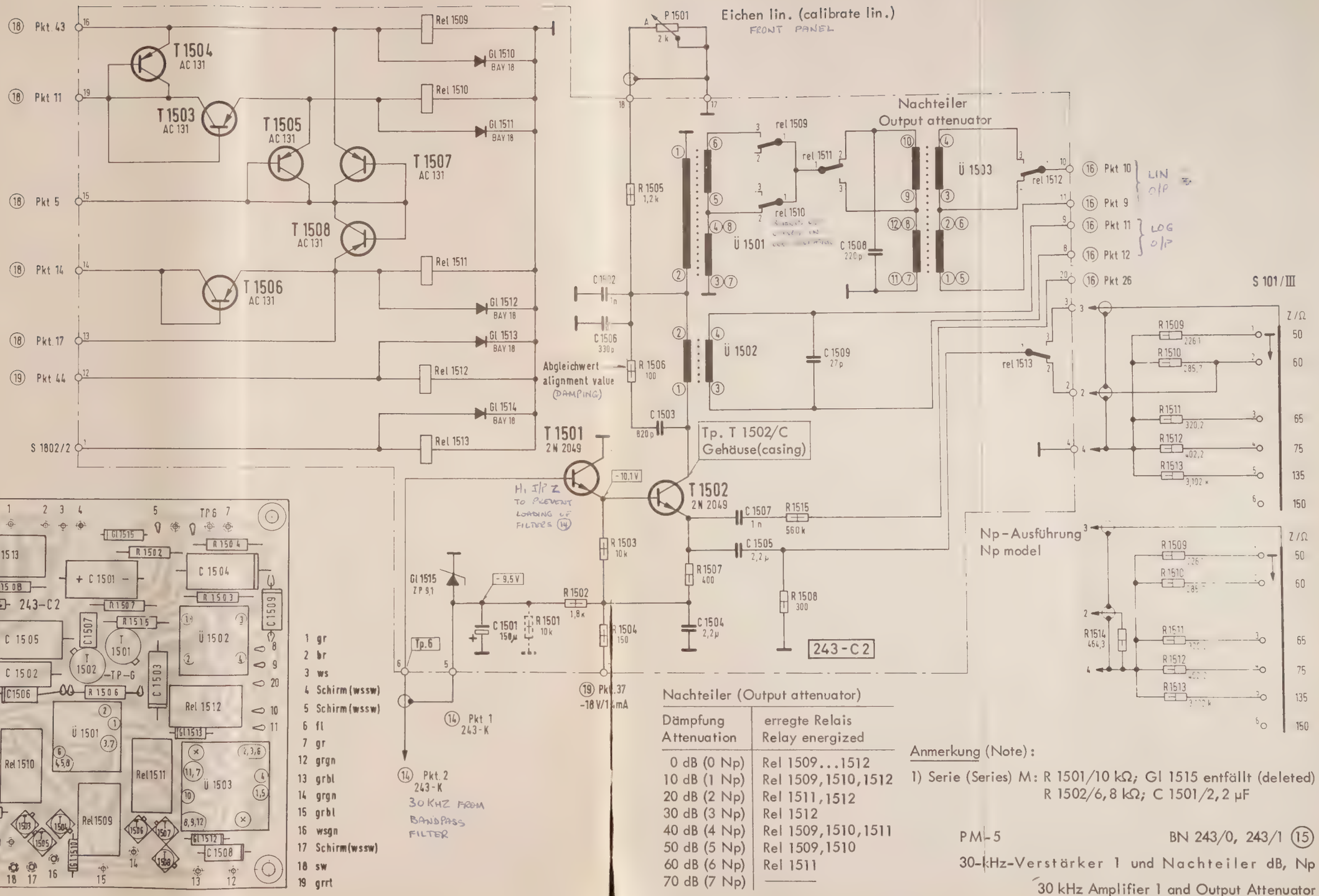
*) Stützpunkte e, f, i, k, l, m und Abgangspunkte 6, 7, 8 und 9 vorbereitet für Sonderausführung mit Bandfilter

Connection points e, f, i, k, l, m and points 6, 7, 8 and 9 are prepared for special version with bandpass filter

PM-5/BN 243

30-kHz-Bandpaß (14)

30 kHz Bandpass Filter



Nachteiler (Output attenuator)	
Dämpfung Attenuation	erregte Relais Relay energized
0 dB (0 Np)	Rel 1509...1512
10 dB (1 Np)	Rel 1509,1510,1512
20 dB (2 Np)	Rel 1511,1512
30 dB (3 Np)	Rel 1512
40 dB (4 Np)	Rel 1509,1510,1511
50 dB (5 Np)	Rel 1509,1510
60 dB (6 Np)	Rel 1511
70 dB (7 Np)	———

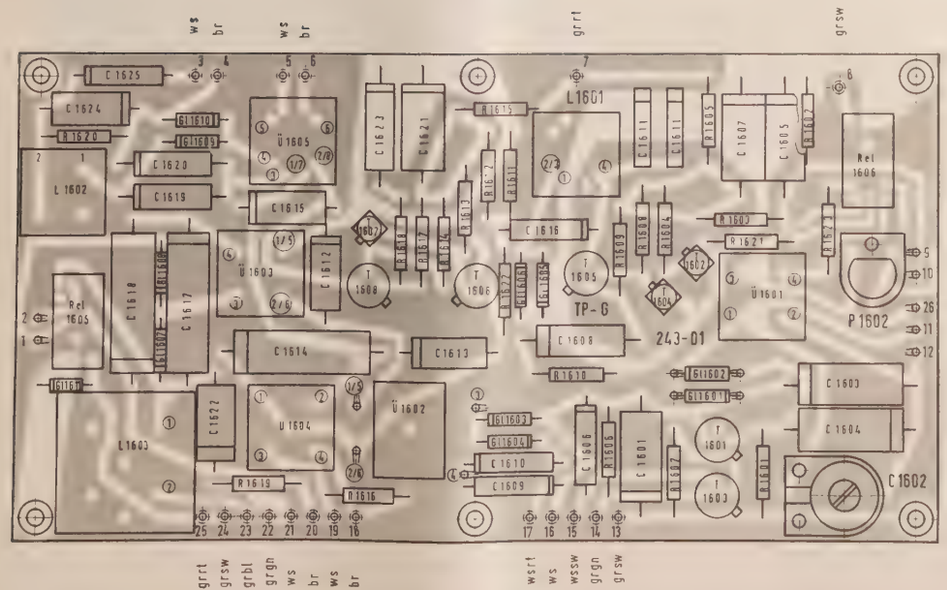
Anmerkung (Note):

1) Serie (Series) M: R 1501/10 kΩ; Gl 1515 entfällt (deleted)
R 1502/6,8 kΩ; C 1501/2,2 µF

PM-5 BN 243/0, 243/1 (15)

30-kHz-Verstärker 1 und Nachteiler dB, Np

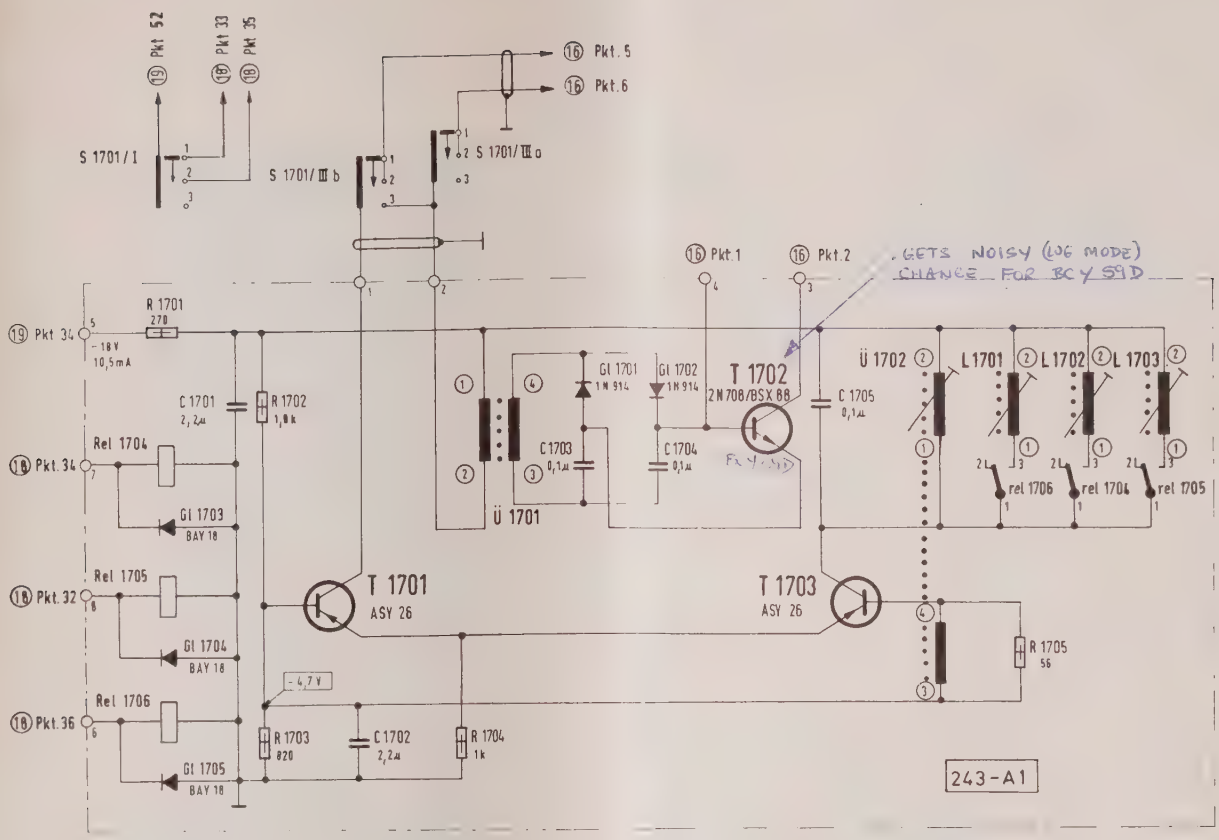
30 kHz Amplifier 1 and Output Attenuator



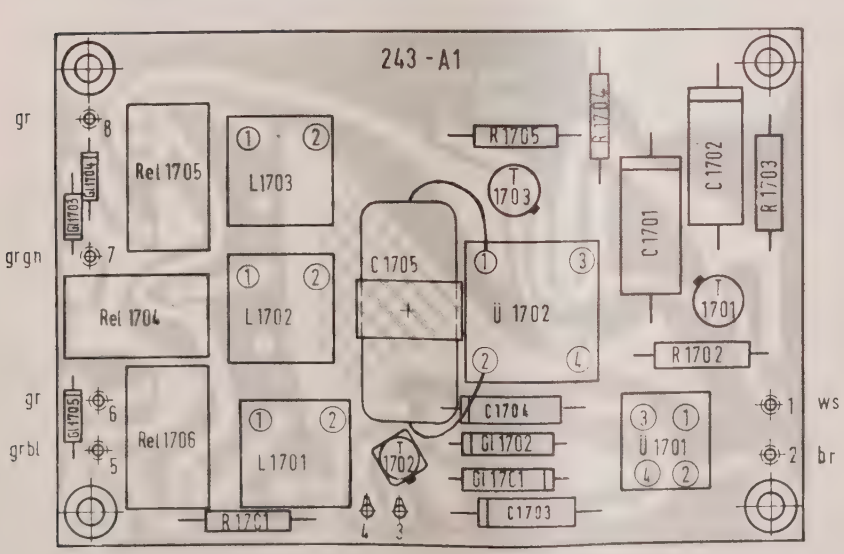
PM-5/BN 243, 243/1

30-kHz-Verstärker 2 und 3 mit Ausgangsteil dB, Np (16)

30 kHz Amplifier 2 and 3 with Output Unit



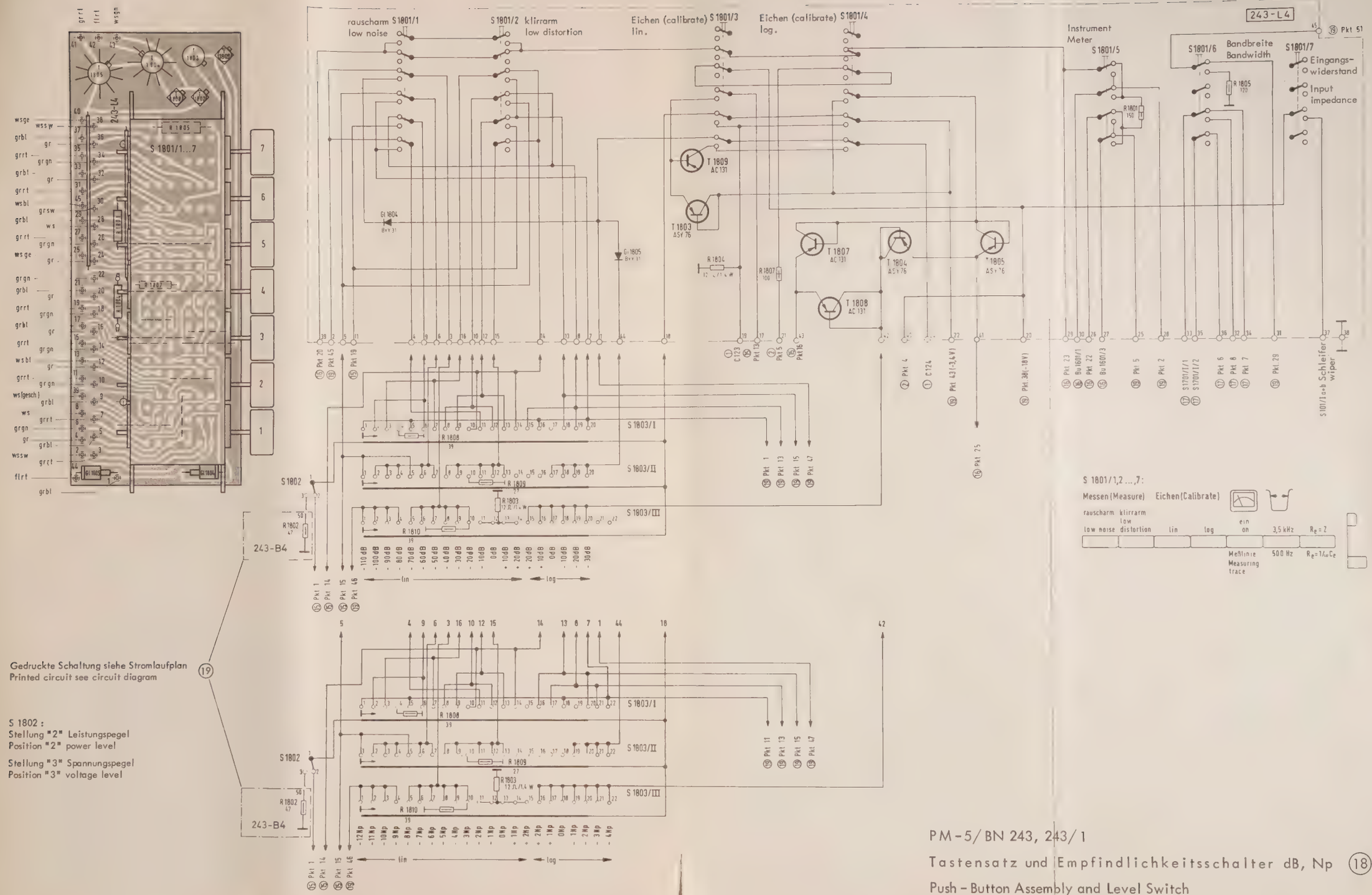
S 1701/I	S 1801/6	Osz.Frequenz (osc.frequency)
1	schmal (narrow)	31 kHz
1	breit (wide)	32 kHz
2	breit (wide)	28 kHz
2	schmal (narrow)	29 kHz
3	———	28 kHz



PM-5/BN 243, 243/1

Umsetzoszillator für Hörer dB, Np (17)

Carrier Oscillator for SSB-Demodulator



Gedruckte Schaltung siehe Stromlaufplan
Printed circuit see circuit diagram

S 1802 :
Stellung "2" Leistungspegel
Position "2" power level

Stellung "3" Spannungspegel
Position "3" voltage level

PM-5/BN 243, 243/1

Tastensatz und Empfindlichkeitsschalter dB, Np (18)

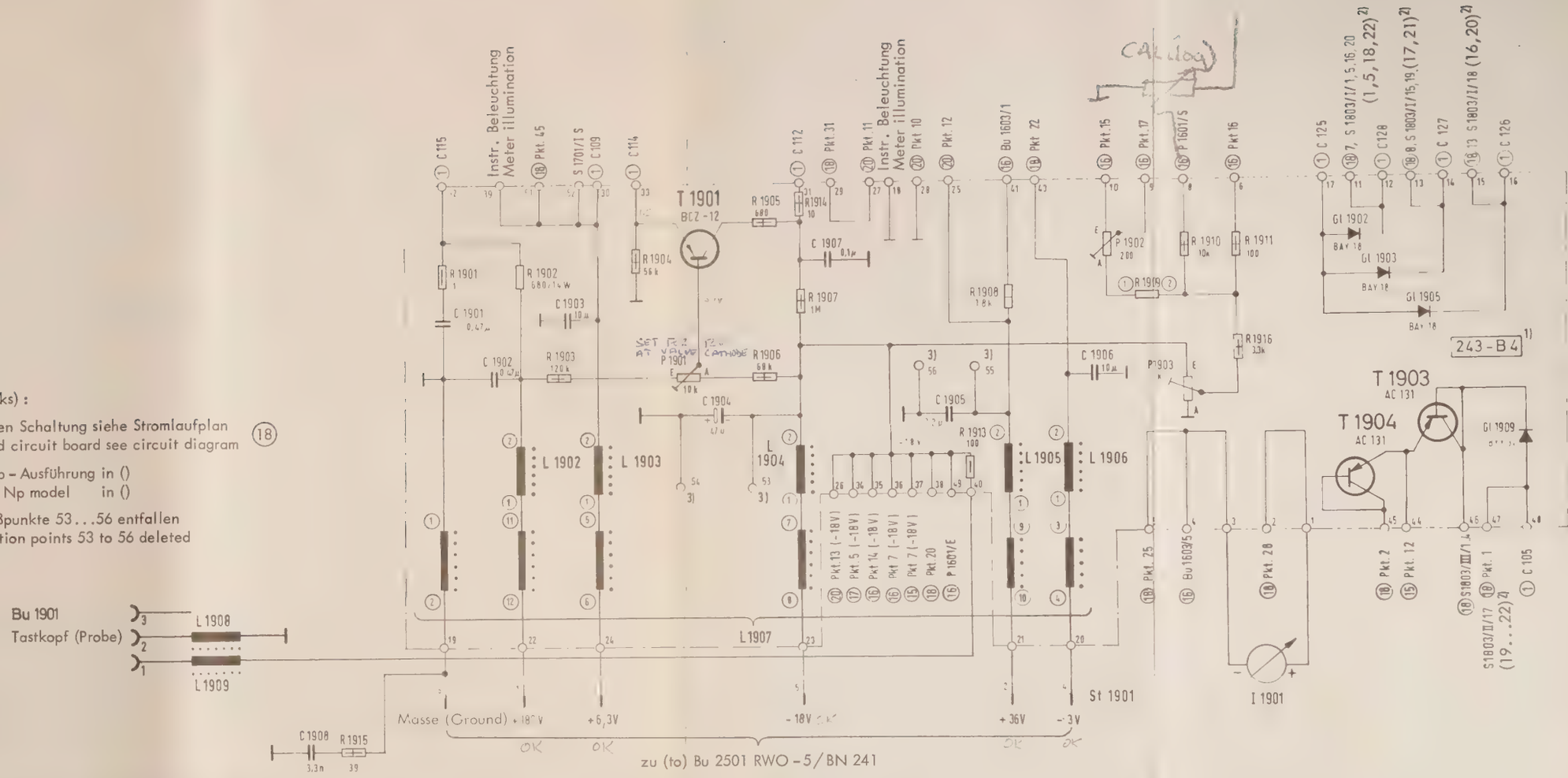
Push-Button Assembly and Level Switch

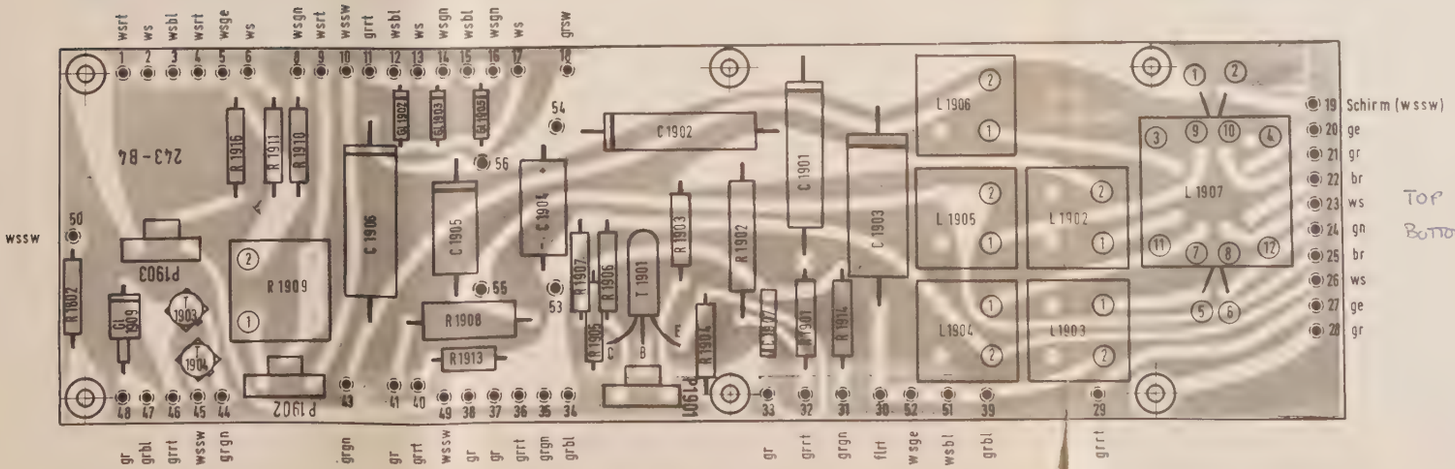
Anmerkungen (Remarks) :

1) Teil der gedruckten Schaltung siehe Stromlaufplan (18)
   Part of the printed circuit board see circuit diagram

2) Anschlüsse bei Np - Ausführung in ()
   Connections with Np model in ()

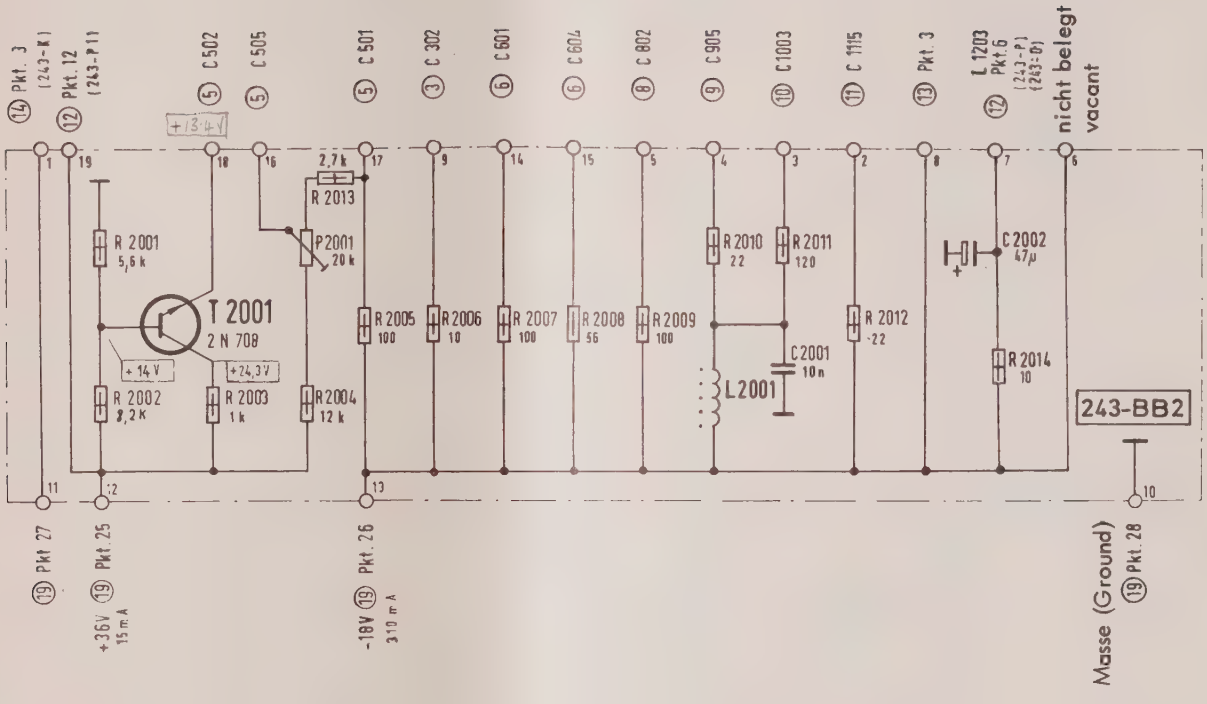
3) Serie K: Anschlußpunkte 53...56 entfallen
   Series K: Connection points 53 to 56 deleted

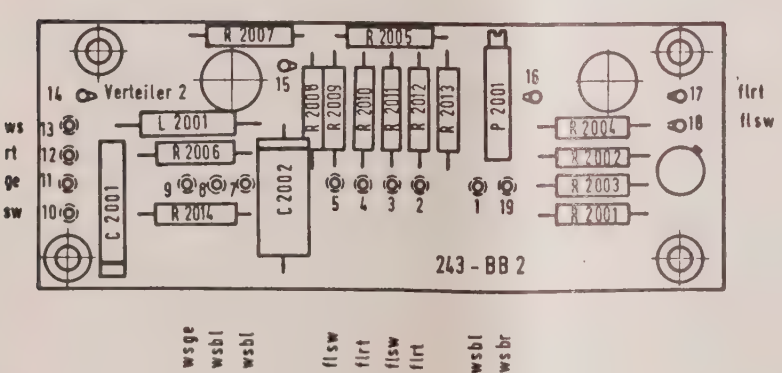




TOP POT ADJUSTS 0 dB
BOTTOM POT " -90 dB

PM-5 BN 243, 243/1
Hauptverteiler (19) dB, Np
Main Distributor

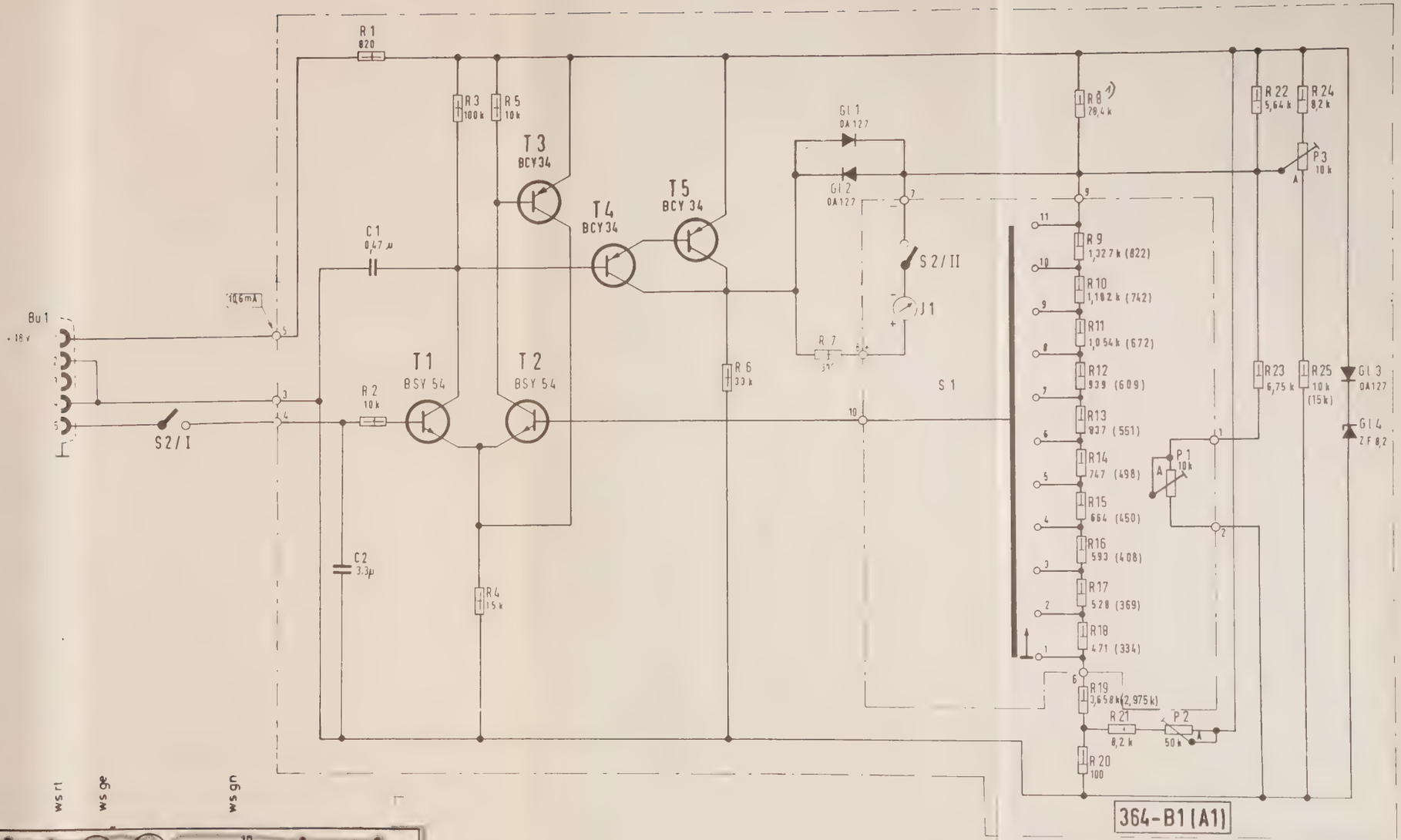




PM-5/BN 243

Verteiler 2 (20)

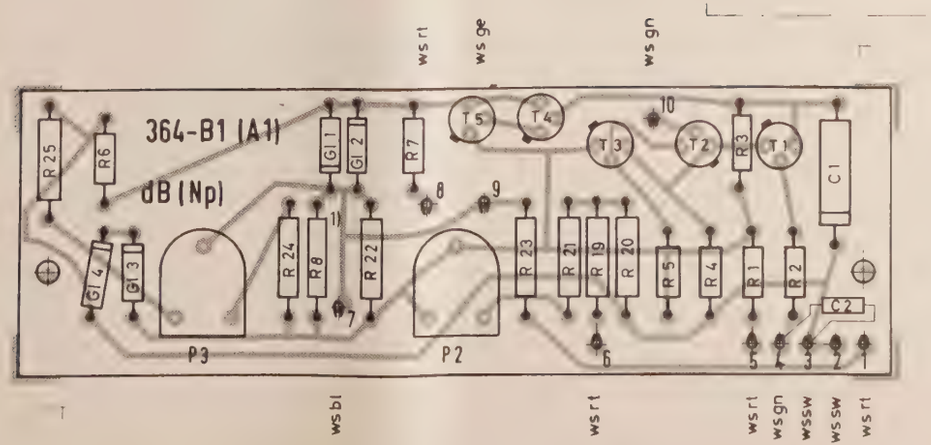
(Distributor)

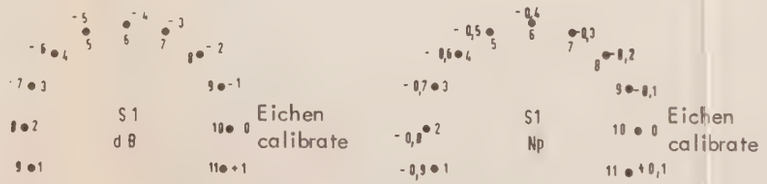


Anmerkungen (Remarks) :

1) entfällt bei dB-Ausführung
deleted in dB model

()-Werte bei Np-Ausführung
()-Values of Np model

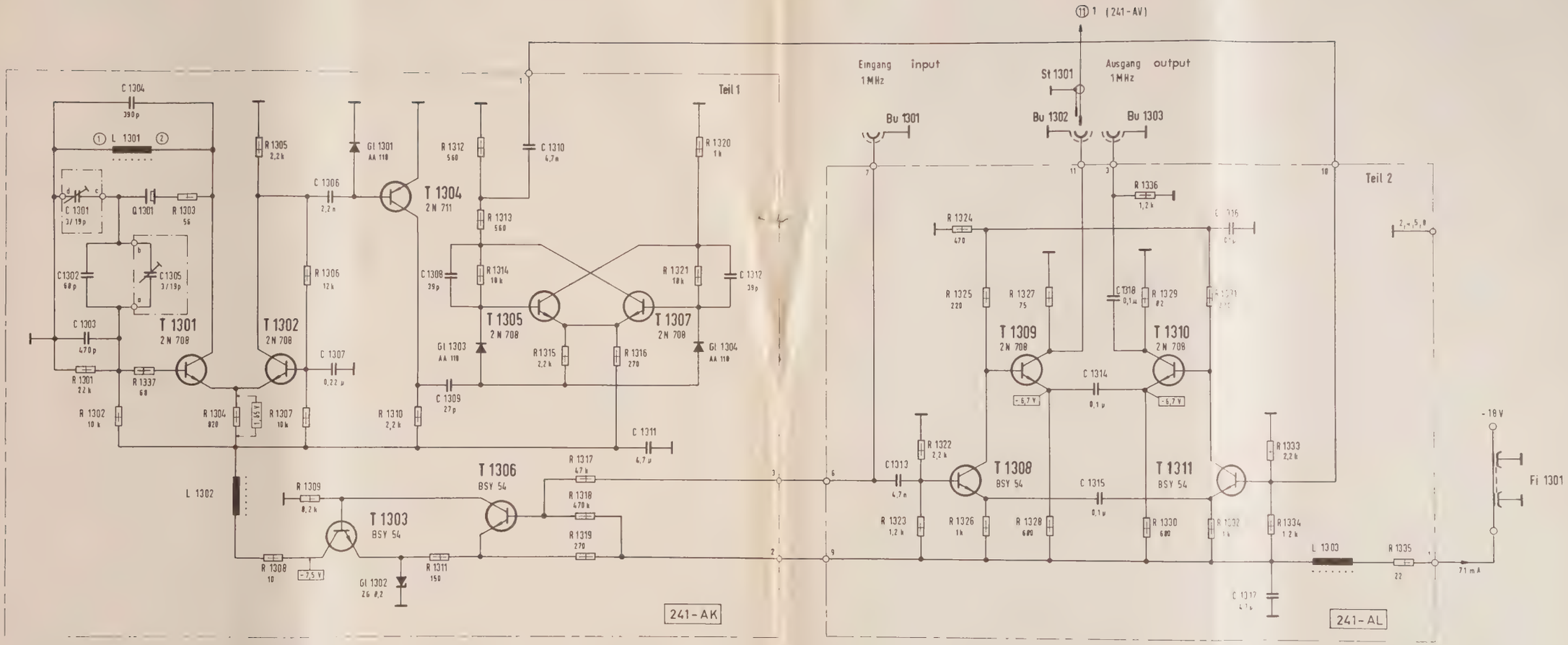




AZD-1 BN 364, 364/1

Anzeigedehner dB, Np

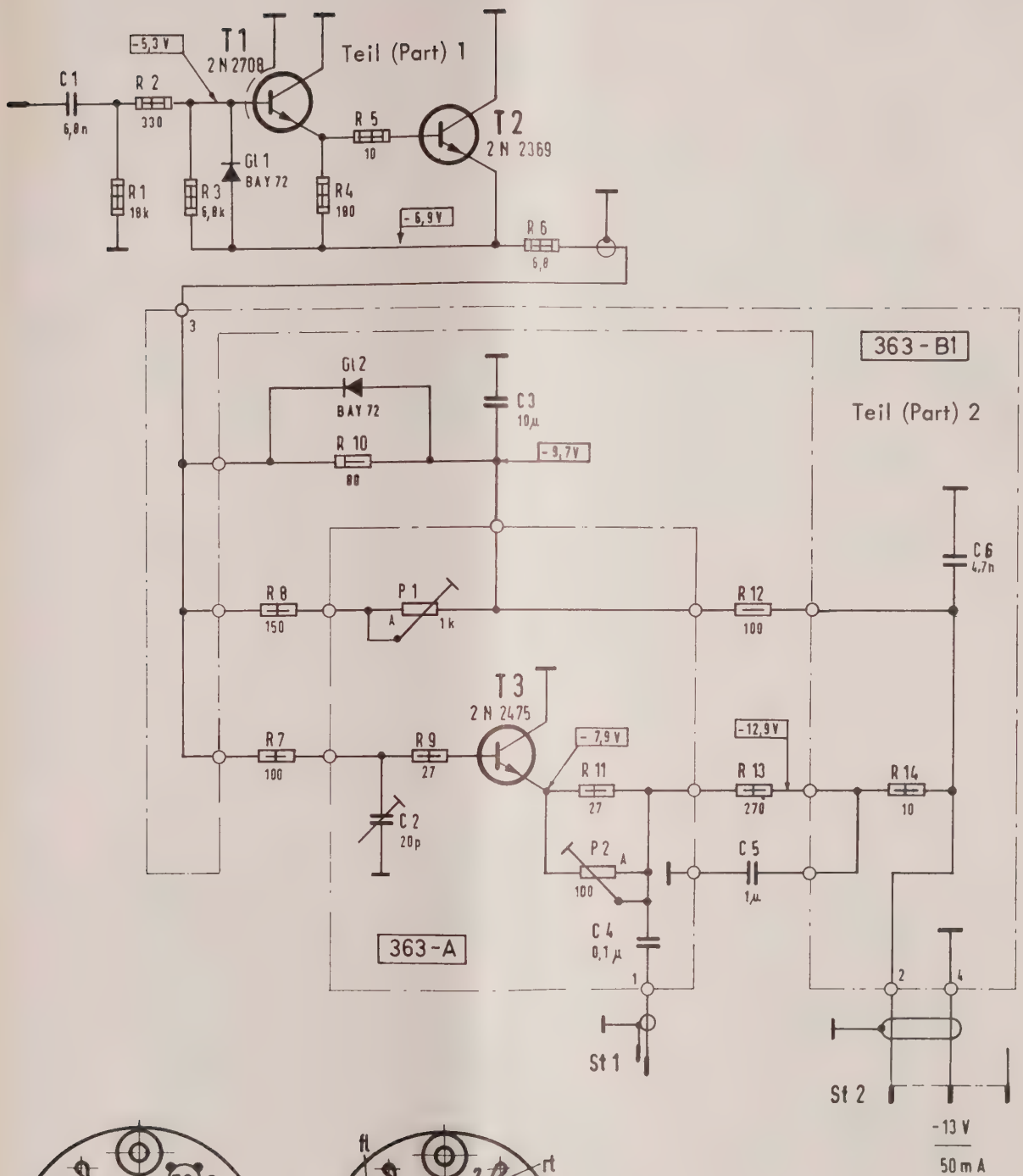
Scale Expander

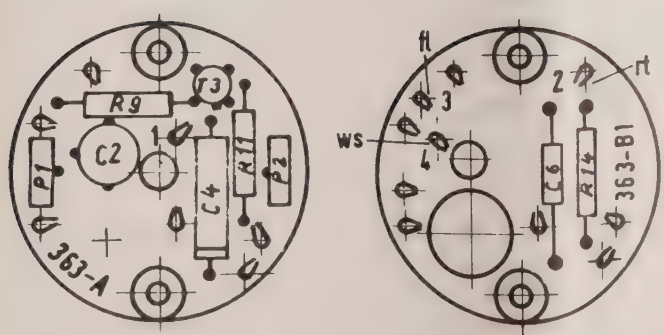


RWO-5/BN 241

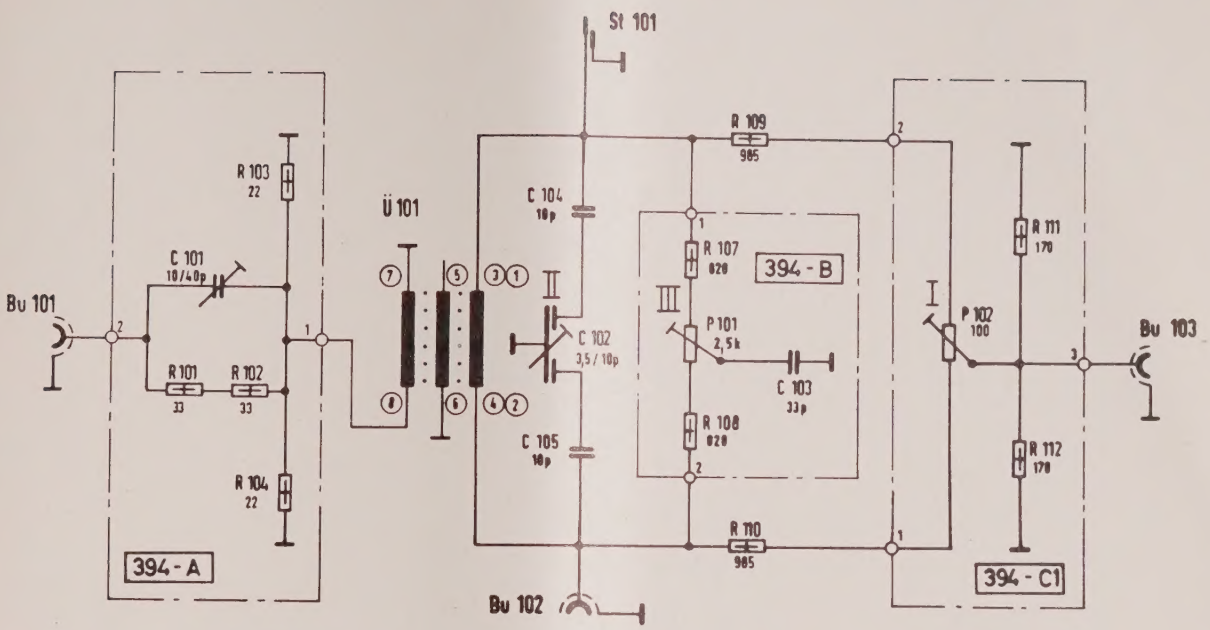
Normalfrequenz-Oszillator Teil (13)

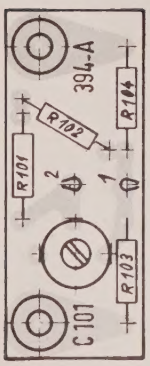
(Standard Frequency Oscillator)

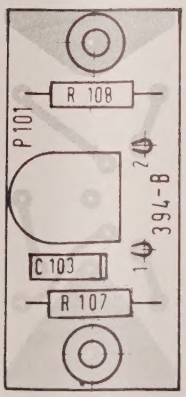


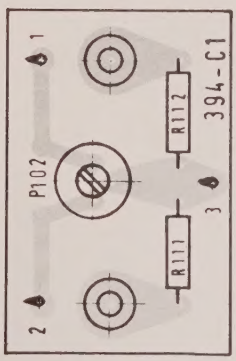


TK-8/BN 363
Tastkopf
(Probe)









RFZ-5/ BN 394

Reflexions-Meßzusatz

(Return Loss Accessory)

MP MASTER
MA24496

Wandel u. Goltermann
7410 Reutlingen, Postfach 259, Telefon 07121/3226, Telex 0729-833 wug d